BOWSER

ESTABLISHED 1885

Reg. U. S. & Can. Pat. Off.

Designers---Engineers
Manufacturers
of

EQUIPMENT

for

Receiving---Storing---Metering
Distributing---Filtering
Dispensing and Merchandising

Gasoline, Oils and Similar Liquids
for
Commercial and Industrial Purposes

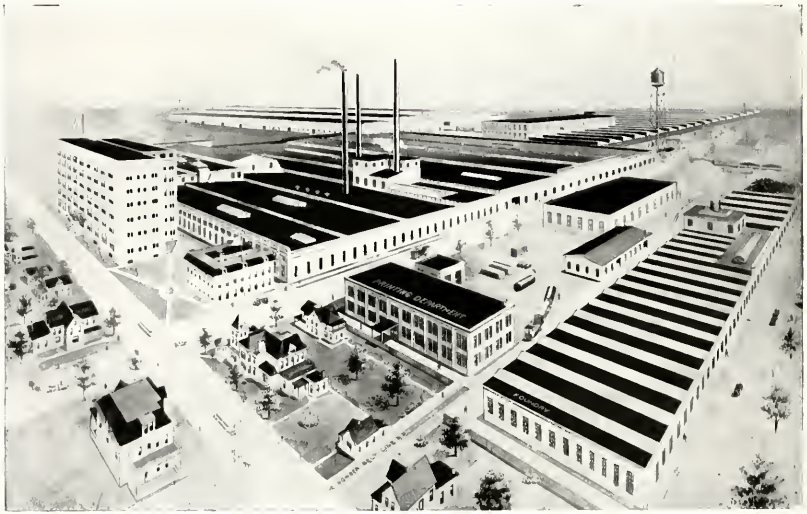
BOWSER SERVICE

INDIANA COLLECTION

S. F. BOWSER & CO., INC.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM



HOME PLANT AND GENERAL OFFICES

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA

TORONTO LONDON BERLIN PARIS ROTTERDAM

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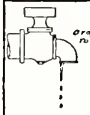
S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA

BOWSER PREVENTS THIS

AMOUNT OF OIL LOST DUE TO SMALL LEAKS

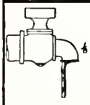
1 MINUTE	LOSS IS	$\frac{1}{10}$ OUNCE
1 HOUR	" "	6 OUNCES
1 DAY	" "	1 GALLON 1 PINT
1 WEEK	" "	8 GALLONS
1 MONTH	" "	34 GALLONS

1 MINUTE	LOSS IS	$\frac{1}{5}$ OUNCE
1 HOUR	" "	20 OUNCES
1 DAY	" "	$3\frac{1}{2}$ GALLONS
1 WEEK	" "	24 GALLONS
1 MONTH	" "	2 BARRELS

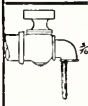


1 MINUTE	LOSS IS	2 OUNCES
1 HOUR	" "	1 GALLON
1 DAY	" "	24 GALLON
1 WEEK	" "	$3\frac{1}{2}$ BARRELS
1 MONTH	" "	14 BARRELS

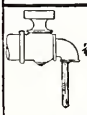
1 MINUTE	LOSS IS	$7\frac{1}{2}$ OUNCES
1 HOUR	" "	$3\frac{1}{2}$ GALLONS
1 DAY	" "	84 GALLONS
1 WEEK	" "	$11\frac{1}{2}$ BARRELS
1 MONTH	" "	50 BARRELS



1 MINUTE	LOSS IS	25 OUNCES
1 HOUR	" "	11 GALLONS
1 DAY	" "	260 GALLONS
1 WEEK	" "	36 BARRELS
1 MONTH	" "	156 BARRELS



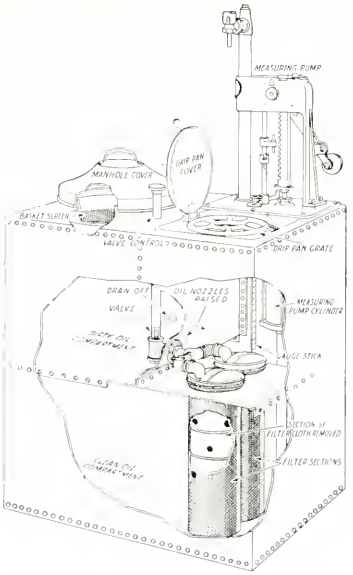
1 MINUTE	LOSS IS	39 OUNCES
1 HOUR	" "	18 GALLONS
1 DAY	" "	$8\frac{1}{2}$ BARRELS
1 WEEK	" "	60 BARRELS
1 MONTH	" "	255 BARRELS



1 MINUTE	LOSS IS	83 OUNCES
1 HOUR	" "	39 GALLONS
1 DAY	" "	$18\frac{1}{2}$ BARRELS
1 WEEK	" "	130 BARRELS
1 MONTH	" "	555 BARRELS

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

Type "B" Oil Filter No. 1



(Combination Filter and Storage Tank)

ADAPTABILITY: The No. 1 Type "B" is a small batch filter especially suited for filtering oil drained from crank case types of steam engines, gas engines, air compressors, ice machines, small turbines and drippings caught in pans about any plant. Having a dirty oil receiving compartment, settling compartment, filter, clean oil storage compartment, also a high grade measuring and dispensing pump, it settles, filters, stores and provides a ready, convenient, quick means of filling oil cans, measures and containers with measured quantities of clean oil. Dirty oil is poured through the screened manhole, and clean oil pumped out as desired.

SPECIFICATIONS

TYPE: "B".

PRINCIPLE OF OPERATION: Batch type of dry filtration.

FINISH: Tank brown enamel and pump black enamel.

CONSTRUCTION: Tank 14 gauge galvanized steel, riveted throughout and all seams soldered.

STANDARD EQUIPMENT

DIRTY OIL COMPARTMENT: Fitted with manhole cover, screen basket, oil control valve, and clean-out flush with bottom.

FILTER UNITS: Two filter units of the cylindrical type are furnished. Two filter cloths are also provided with each unit.

CLEAN OIL COMPARTMENT: Fitted with a quart self-measuring piston-type pump which may be adjusted to measure either pint or half-pint by means of positive mechanical stops. Pump may also be equipped with Fig. 156B meter at extra cost.

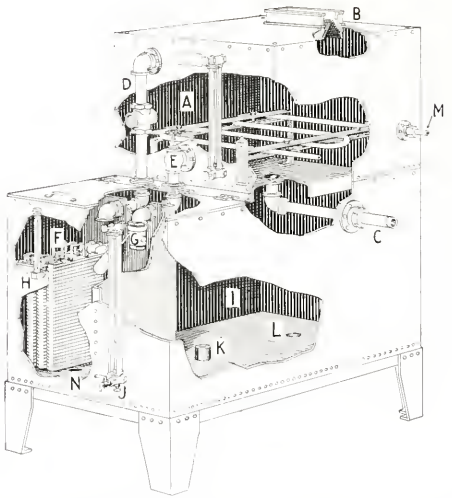
NOTE. Should the standard filter not suit the requirements, a Bowser engineer will gladly recommend one which will.

No.	Hourly Filtering Capacity Gallons *Maximum	Capacity Clean Oil Gallons	Capacity Dirty Oil Gallons	FILTERING UNITS		Shipping Weight Pounds	Outside Dimensions—Inches		
				Size Inches	No.		Total Height	Front to Back	Length
1	4	33½	18.5	4¾x12	2	225	50	28	21

*Hourly filtering capacity is approximate and varies with oil viscosity and local conditions.

NOTE: In design, color and construction, the Type "B" No. 1 Filter matches the Bowser Figures 63 and 64 Lubricating Oil Handling Outfits.

Type "B" Oil Filters Nos. 2, 3, 5, 7, 9, 11 and 13



ADAPTABILITY: These filters are especially adapted for service where conditions make batch clarification necessary or desirable. Used for clarifying cutting and quenching oils as well as lubricating oils.

SPECIFICATIONS

TYPE "B"

PRINCIPLE OF OPERATION. Batch type Dry Filtration.

FINISH. Nos. 2, 3 and 5 brown enamel with nickel plated trimmings. Nos. 7, 9, 11 and 13 blue rust resisting paint with nickel plated gauges.

CONSTRUCTION. Nos. 2 and 3, 14 gauge and Nos. 5, 7, 9, 11 and 13, 12 gauge galvanized steel riveted throughout and all seams soldered. Nos. 7, 9, 11 and 13, steel. Tube sheet welded.

STANDARD EQUIPMENT

DIRTY OIL COMPARTMENT (A), with inlet screen (B), steam coil (M), sludge draw off connection (C), cover.

FILTER COMPARTMENT (F), with inlet float control valve (G), head gauge (H), and drain connection (N). Two filter bags are supplied with each filter unit.

CLEAN OIL COMPARTMENT (I), with oil gauge and draw off cock (J), clean oil outlet connection (K), and drain connection (L).

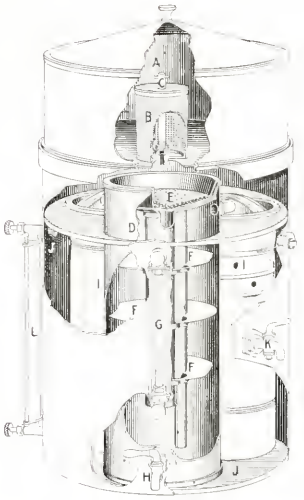
SUPPORTING BASE. To raise filter 8" off the floor.

NOTE. Should the standard filter not suit the requirements, a Bowser engineer will gladly recommend one which will.

No.	Hourly Filtering Capacity Gallons *Maximum	Capacity of Clean Oil Gallons Center Line of Nozzles	Capacity Dirty Oil Gallons	FILTERING UNITS Size Inches	FILTERING UNITS No.	Shipping Weight Pounds	Outside Dimensions—Inches With Supporting Base Total Height	Front to Back	Length
2	50	[illegible]	22	3×13	2	200	34	28	25
3	60	[illegible]	32	3×13	[illegible]	475	52	30	28
5	120	16	132	12×18	[illegible]	1600	66	42	57
7	300	[illegible]	225	18×24	6	2200	78	74	56
9	450	24"	276	18×24	11	2900	87	86	68
11	700	35"	450	18×24	14	3400	94	94	84
13	875	1-36	1-36	18×24	15	4000	114	98	98

*Hourly filtering capacity is approximate only. As power [illegible] viscosities and local conditions

Type "R" Oil Filter No. 7



ADAPTABILITY This filter meets the need of a small portable Type of Batch Filter

SPECIFICATIONS

TYPE "R"

PRINCIPLE OF OPERATION Batch type of Dry filtration.

FINISH Brown enamel with nickel plated trimmings

CONSTRUCTION 24 gauge galvanized steel lock seamed and soldered.

STANDARD EQUIPMENT

RECEIVING COMPARTMENT (A), with removable strainer (B), and flow control valve (C).

PRECIPITATION COMPARTMENT (D) with strainer (E), saucer shaped trays (F), oil gauge (G), and water draw-off cock (H)

FILTER UNITS (I). Two filter units of the cylinder type are included. And two filter cloths are supplied with each filter unit

CLEAN OIL COMPARTMENT (J) with draw-off cock (K) and clean oil gauge (L).

NOTE Should the standard filter not suit the requirements, a Bowser engineer will gladly recommend one which will

No.	Hourly Filtering Capacity Gallons *Maximum	Total Holding Capacity Gallons	Capacity Receiving Compartment Gallons	Capacity Clean Oil Gallons	Outside Filter Dimensions Inches		Filter Units Inches		No. Filter Units	Shipping Weight Pounds
					Diam.	Height	Diam.	Height		
7	21½	15	4.8	7	15½	27	5½	13	2	80

*Hourly filtering capacity is approximate and varies with oil viscosity and local conditions.

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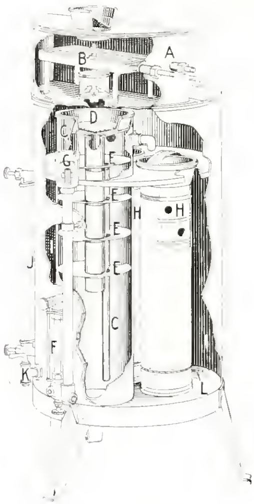
TORONTO LONDON BERLIN PARIS ROTTERDAM

Type "R" Oil Filter No. 8



ADAPTABILITY The Type "R" No. 8 Filter is designed for use either as a continuous filter, or as a batch filter. When greater capacities are desirable, the Type "A" Continuous, or the Type "B" Batch Filters are recommended.

SPECIFICATIONS

TYPE. "R"

PRINCIPLE OF OPERATION [illegible] tinuous Dry filtration.

FINISH Brown enamel with [illegible] plated trimmings.

CONSTRUCTION 24 gauge [illegible] steel, [illegible] and soldered.

STANDARD EQUIPMENT

RECEIVING COMPARTMENT (A), with removable screen inlet strainer box, steam coil, and flow control valve (B).

PRECIPITATION COMPARTMENT (C), with strainer (D), saucer shaped trays (E), water gauge (F) and automatic overflow (G) with 3/8" drain at bottom.

FILTER UNITS (H) Two filter units of the cylinder type are included. And two filter cloths are supplied with each unit.

CLEAN OIL COMPARTMENT (I), with oil gauge (J), draw off cock (K), and 1" drain flange on bottom (L). When the filter is used as a continuous type the clean oil [illegible] the drain flange with [illegible]

NOTE. Should the standard filter not suit the requirements, Bowser engineer will gladly recommend [illegible]

Hourly Filtering Capacity Gallons *Maximum	Total Holding Capacity Gallons	Capacity Receiving Compartment Gallons	Capacity Clean Oil Gallons	Outside Filter Dimensions Inches		Filter Units Inches		No. Filter Units	Shipping Weight Pounds
				Diam	Height	Diam	Height		
[illegible]	22.5	[illegible]	[illegible]	18	[illegible]	5	[illegible]	2	[illegible]

*H[illegible] and varies with oil viscosity and local conditions.

Transfer Pump Figure 20

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

BOWSER TRANSFER PUMP [FIGURE 20]

The Figure 20 Transfer Pump is especially designed for those who desire an inexpensive means of transferring liquids on the same level, from one container to another.

Its use enables complete draining of containers without spillage, mess or unnecessary labor. Either light or heavy liquids may be transferred easily and quickly.

The pump is substantially made of welded steel tubing. There are no seams to break or leak. Plunger poppet and bottom valve are made of brass to insure tight seating. The stuffing box at the top prevents liquid from overflowing.

The suction pipe of the pump is made sufficiently long to accommodate practically any shipping barrel or drum now in use.

Specifications

SUCTION PIPE: 16-gauge steel tubing, screwed into cast-iron body.

DISCHARGE PIPE: 16-gauge steel tubing, screwed into body of pump.

PLUNGER ROD: 5 16" solid steel rod.

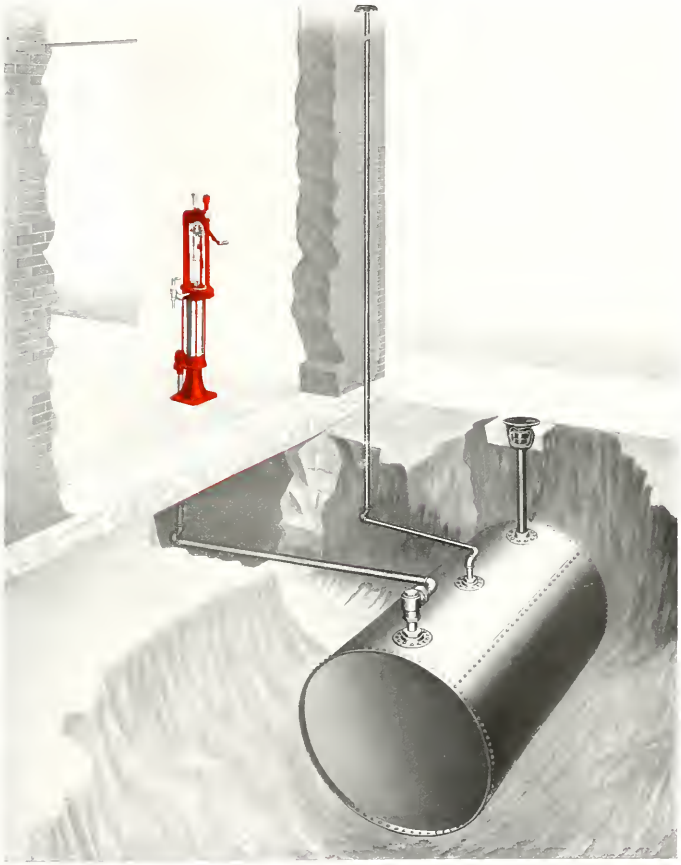
PLUNGER: Brass with brass poppet valve. Fitted with a cupped leather to prevent any liquid from slipping back past the plunger.

STUFFING BOX: Packed with twisted asbestos.

DIMENSIONS AND SHIPPING WEIGHT

Diameter of suction and discharge pipe, outside	$1\frac{5}{8}$"
Length of suction pipe below pump body	3' 4"
Length of discharge pipe.	14"
Length over all.	3' 11"
Shipping weight, approximate	15 lbs.

Figures 41 and 44 Outfits



Representative Installation of a Standard Figure 41 Outfit Complete with Type "C" Tank and Fittings.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER FIGURES 41 & 44 OUTFITS

BOWSER Figure 41 Outfit is designed for the handling of gasoline, benzine, naphtha, and other volatile liquids. The standard outfit consists of a measuring pump intended for inside use and a cylindrical storage tank for installation under-ground.

The Figure 41 Outfit meets a wide variety of liquid handling conditions. The pump may be placed at the point most convenient for service thus eliminating frequent trips to a distant source of supply.

With this outfit, surroundings near the pump are kept perfectly clean, because there's no leaking, spilling or dripping. The liquid is kept free from dirt, water and other impurities, insuring maximum results in usage.

The pump is very neat in appearance—sturdy, compact, finished in red enamel with nickeled trimmings. It will measure accurate quantities of gallons, half-gallons, quarts and pints, easily and quickly. Only a small floor space is required for installation of the pump on the service floor.

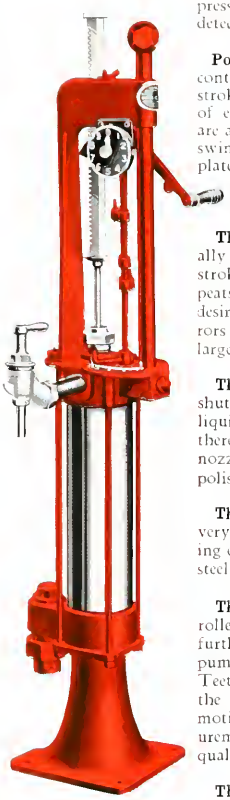
The handling of volatile liquids, with this type of equipment, is absolutely safe. Protection against fire and explosion is insured as the outfit is leak- and evaporation-proof.

For the handling of volatile liquids the outfit is approved and labeled by the Underwriters' Laboratories, for either inside or outside use.

To obtain absolute accuracy in measurement the pump and tank may be any reasonable distance apart horizontally but the limit vertically is 12 feet, for straight run gasoline, from the bottom of the tank to the base of the pump. Where a higher lift than 12 feet is necessary, see explanation of Figure 44 on opposite page.

PUMP FEATURES

The rigid construction of the pump insures easy, smooth operation, speedy discharge, accurate measurement and many years of uninterrupted, satisfactory service.



Standard Figure 41 Pump

All parts which make up this pump are carefully machined and inspected. In case of accidental damage to any part of the pump, a replacement part may be quickly and easily installed. After complete assembly the pump is thoroughly tested with liquid under pressure, so that the smallest leak is detected.

Positive, mechanical quantity stops control the length of the piston stroke. These stops permit delivery of exact intermediate quantities and are adjusted by moving a lever which swings over a quantity indicator plate. They are set to absolute accuracy in our factory and then sealed.

The discharge register automatically tallies each complete gallon stroke, up to 10 gallons, and then repeats. May be set back to 0 when desired. This register eliminates errors in counting the strokes when large quantities are discharged.

The anti-drip nozzle provided with shut-off, effectively stops the flow of liquid when pumping ceases. And there is no dripping thereafter. The nozzle is nickel-plated and highly polished.

The heavy grey iron bracket is of very substantial construction, insuring easy, smooth operation of the cut steel cog rack and pinions.

The cog rack and pinions of cold rolled steel with machine cut teeth further insure easy operation of the pump, long life and durability. Teeth in the pinion fit perfectly into the cog rack teeth, eliminating lost motion and assuring accurate measurement as well as long wearing quality.

The locking arrangement consists of eylets cast into pump bracket and crank handle through which a padlock may be inserted.

FIGURES 41 & 44 OUTFITS

The plunger is fitted with a formed cup leather, especially treated for the liquid to be handled. The leather is constantly held against the cylinder walls by an expanding, brass spring. This prevents any slippage of liquid past the plunger. Each stroke propels an exact quantity through the pump.

The brass valves and valve seats are all ground and tested together to insure tight seating. Leaking back through the valves is eliminated.

The cylinder is of the best grade of heavy, brass, seamless tubing. It is one piece of metal —not a joint to break loose or cause trouble.

The expansion chamber is a tube capped with a hollow ball which provides room for expansion of liquid in the cylinder, due to the changes in temperature.

The line valve is for installation above the top of the tank. It is of the single, flat, poppet type with brass seat and poppet. The poppet and seat are ground and tested together to insure tight seating. This prevents the liquid from returning to the tank, and insures accurate measurement of the pump.

TANK FEATURES

The standard Figure 41 Outfit includes a standard type "C" tank. This tank is of heavy galvanized steel of the best quality. All seams and joints are carefully riveted and soldered. This makes a very durable joint and assures a tank that will safely hold any liquid without leakage.

Each tank after being completed, is thoroughly inspected and tested with liquid for leaky joints, defective materials and workmanship.

Gauge stick, graduated in inches, is furnished with a chart, so that the approximate amount of liquid in the tank can be ascertained at any time. Gauging is done through the fill pipe.

Underwriters' Label: Tanks are built in accordance with specifications approved by the National Board of Fire Underwriters and are regularly tested, approved and labeled by their laboratories for safe handling of liquids.

(For complete information on Tank furnished with this outfit see Light Type "C" Tank Bulletin.)

Illustration of Standard Figure 44 Drop Cylinder Pump installed on an upper floor with the measuring cylinder located between floors—maximum distance from bottom of tank, 14 feet.

FIGURE 44

The Figure 44 is a drop cylinder type of pump, designed for long distance (high-lift) pumping service where the lift is in excess of 14 feet and not more than 50 feet.

By this arrangement liquids may be stored safely in the basement or underground with the discharge points located for most convenient service on any upper floor. Accuracy in measurement is assured.

The Figure 44 description, pump features and tank are the same as that applying to the Figure 41 outfit with exception of several mechanical features which are fully explained under the note under specifications.

BOWSER FIGURES 41 & 44 OUTFITS

Specifications

The standard Figure 41 Outfit consists of a measuring pump of one gallon capacity and a cylindrical storage tank of galvanized steel construction, in capacities of 120, 280, 550 and 1,000 gallons.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Piston type measuring, up stroke, accurate measurement, easy operation, fire and explosion-proof.

MEASUREMENT: Measures one gallon at each complete stroke of the plunger; quantities of half gallon, quart or pint controlled by setting the positive intermediate quantity stops.

CONSTRUCTION: Cog rack and driving pinion of cold rolled steel with teeth machine cut; pump bracket of cast iron; cylinder of seamless brass tubing; valves of material suitable to liquid to be handled; plunger of spring and leather type, fitted with special leather according to liquid handled.

AIR CHAMBER: Provides for any expansion of liquid in the pump.

DISCHARGE REGISTER: Records complete gallons delivered up to 10 and repeats. May be returned to 0 when desired.

DISCHARGE NOZZLE: Anti drip type with shut-off valve.

LINE VALVE: Single poppet type. Seat and poppet brass. Removable seat. For installation above tank.

UNDERWRITERS' LABEL: Tested, approved and labeled by Underwriters' Laboratories for safe handling of volatile liquids either inside or outside buildings.

FINISH: Red enamel with nickeled trimmings.

GENERAL SPECIFICATIONS

Height over all, cog rack up	5' 6"
Height to bottom of nozzle tip	2' 4"
Floor space required	10" sq.
Suction pipe	2"
Shipping weight, approximate	135 lbs.

TANK

TANK AND FITTINGS: Standard Type "C" galvanized cylindrical. Furnished in 120, 280, 550 and 1,000 gallon capacities. All necessary flanges, suction and fill pipes are furnished standard with the tank. Fill pipe of more than 5 ft. in length furnished at extra cost.

(For complete information, see Light Type "C" Tank Bulletin.)

EQUIPMENT FURNISHED AT EXTRA COST

METER: Figure 156-B. Records in quarts and gallons to 10,000 gallons and repeats.

FILTER: Figure 145-B. Separates water and other impurities from gasoline as it is being served.

HOSE DRAINING ATTACHMENT: Fig. 210-B. Facilitates complete drainage of hose.

PORTABLE NOZZLE: Figure 131. For attaching to end of hose. Effectively stops the flow of liquid when pumping ceases.

PADLOCK WITH TWO KEYS: For securely locking pump.

HOSE: Metal lined, flexible, kinkless.

DRIP PAN: Furnished without return connection for gasoline use.

FILL BOXES: Figures 158, 174, and 175. Used as protective covers for the fill pipe.

STORAGE INDICATOR: Figure 202-B. Indicates approximate contents of tank.

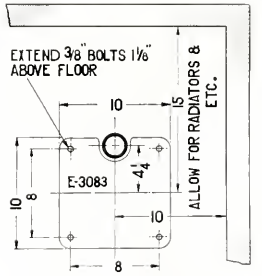
(For complete information on above items, see Accessories Bulletins.)

MANHOLE: To permit installation of Storage Indicator.

PIPE AND FITTINGS: For connecting pump to tank.

NOTE: The specifications, standard equipment, general specifications and accessories for the Figure 44 Outfit are the same as the Figure 41 except as follows: The cog rack is cast iron instead of cold rolled steel. The pump has a back gearing arrangement which makes operation easy for long lifts.

The additional pipe and plunger rod required for installing the Figure 44 Pump more than 14 feet above cylinder top, is furnished at extra cost. Up to 14 feet this pipe and rod are furnished standard with the outfit.



Floor Plan Figure 41 Pump

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Figure 63 Outfit

STANDARD FIG. 63 OUTFIT

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FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

FIGURE 63 OUTFIT

THE standard Figure 63 is a complete outfit for storing and dispensing lubricating oils and similar liquids. It consists of an accurate measuring pump mounted on a rectangular storage tank.

The sturdy pump is of the piston type and of 1 quart capacity (1 gallon capacity pump may be furnished at extra cost.) Storage tank is of 65 gallons capacity and is substantially constructed of high grade galvanized steel with riveted and soldered seams throughout.

This outfit is ideal for departmental storage and service of various oils, making it unnecessary for employees to waste time in going to a central oil house or some other distant, out of the way storage space for small or large quantities of oil. It will keep oil indefinitely in its original high quality and will place any oil department on a basis of true oil handling economy. The entire outfit requires a very small floor space and can be placed at any point most convenient for quick service.

The Bowser Figure 63 will eliminate unsightly conditions and loss of oil and time which always prevails when lubricating oils are stored in barrels or drums and drawn through faucets or spigots into various containers for distribution. It presents a clean, neat and business-like appearance on the sales floor. Leaky barrels, contamination of oil (due to dust and dirt) spillage and other losses are entirely eliminated when the oils are handled by this modern efficient outfit.

Clean oils are always as easily and readily available as water from a faucet. Machinery no longer needs to suffer because of lack of oil or because the oil contains grit, dust and dirt. The Bowser Figure 63 is dust- and leak-proof —oils are always kept fresh and uniform.

Pumps of either one quart or one gallon capacity can be furnished with the outfit. These pumps are very accurate, easy operating and rapid in service. Quart pump measures quarts, pints, and half pints.—gallon pump measures gallons, half gallons, quarts and pints. Any of these quantities are easily obtainable, accurately measured and recorded, at the will of the operator. The anti-drip nozzle on the pump is small enough to fit into the opening of almost any receptacle —prevents dripping and cuts off the flow of oil quickly when pumping ceases.

The pump may be securely locked to prevent operation, and the opening in the tank is provided with a locking arrangement so that there is no possibility of loss of oil through theft or other unauthorized withdrawals, provided, of course, the proper precaution is taken to lock the outfit.

A recording meter (Fig. 156-B) which can be furnished with the outfit, provides an accurate check on every drop of oil withdrawn through the pump. It eliminates errors in oil consumption figures and provides a true basis for accurate cost and inventory records. This meter records in quarts and gallons to 10,000 gallons and then repeats automatically.

FIGURE 63 OUTFIT

PUMP FEATURES

The pump is of the well-known piston type design and is sturdily constructed throughout to give rapid, accurate, economical and satisfactory service.

Each part of the pump is carefully machined and inspected and after the entire outfit is completely assembled it is inspected and tested with liquid under pressure for leaky joints and defective materials. In case of accidental damage to any part of the pump, replacement parts can be easily and quickly secured and installed.

Positive mechanical quantity stops, which control the length of the piston stroke for exact measurements, are adjusted, set, and then sealed to accuracy. These stops are easily set for the desired quantity by simply moving a lever which swings over the quantity indicator plate.

The **heavy grey iron bracket** is rigidly constructed, insuring easy, smooth operation of the cog rack and pinion.

The **cylinder** is of one piece of seamless brass tubing.

The **plunger** is fitted with a formed cup leather especially treated for the liquid to be handled. The leather is held against the cylinder walls by an expanding brass spring. This prevents any slippage of liquid past the plunger and thus each stroke of the handle discharges an exact quantity of liquid through the pump.

The **valves** and **valve seats** are carefully ground and tested together to insure tight seating.

The **cog rack and driving pinions** are of cold rolled steel with machine cut teeth. Their close fit and true lift of the piston insure easy operation, accurate measurement and long life.

The **anti-drip nozzle** prevents any further flow of liquid after the pumping operation is completed. Nozzle tip is small enough in diameter to fit into small mouthed containers. Dripping and overflowing is avoided.

The pump handle and bracket are equipped with **locking lugs,** through which a pad lock may be inserted to prevent operation of the pump.

TANK FEATURES

The tank is constructed of 14 gauge galvanized steel assembled with riveted and soldered seams. The solder is sweated into the joints from the inside to the outside, insuring a tank which will remain leak-proof permanently. After the tank is completed it is subjected to a liquid pressure test so that the slightest leak may be detected and corrected.

Metal gauge stick, graduated in five gallon quantities, is suspended through the pump plate in a convenient position so that the operator may readily consult it at any time to determine the approximate quantity of oil in the tank.

Drip pan is 6½ inches in diameter and is removable. It is covered with a hinged metal cover provided with eyelet for locking, to prevent unauthorized withdrawals of oil from the tank.

FIGURE 63 OUTFIT

Specifications

STANDARD EQUIPMENT

The standard Figure 63 outfit consists of a 1 quart capacity measuring pump mounted on a rectangular storage tank of 65 gallons capacity.

PUMP

PUMP DETAILS:

CHARACTERISTICS—Up stroke piston type measuring, easy operation, rapid discharge, accurate measurement, dust-proof

MEASUREMENT—Pump measures 1 quart at each complete stroke of the piston. Quantity stops may be set so that partial strokes will deliver a pint or half pint

CONSTRUCTION DETAILS

Bracket—T" section cast iron

Rack and Pinion—Cold rolled steel with machine cut teeth

Cylinder—Heavy seamless brass tubing

Plunger—Solid type

Valves and Valve Seats—Poppet type, steel against steel on gallon pump and bronze against cast iron on quart pump

NOZZLE: Anti-drip type. Tip is ⅛ inch in diameter—permits discharging into small mouthed containers and still is large enough not to retard the easy operation of the pump

LOCKING ARRANGEMENT: Pump bracket and handle are fitted with cast iron lugs to provide locking with a padlock

FINISH: Black enamel with nickel trimmings

DIMENSIONS

Height over all with quart pump (rack up)	50 in
Height over all with gallon pump (rack up)	65 1/2 in
Height over all with display tube on quart pump	57 in
Height over all with display tube on gallon pump	67 in
Height, top of tank to bottom of nozzle tip, quart pump	16 in
Height, top of tank to bottom of nozzle tip, gallon pump	27 in

TANK

CAPACITY: 65 gallons

TYPE: "B", rectangular.

CONSTRUCTION DETAILS: 14 gauge galvanized steel. All seams riveted and soldered, both inside and outside

DRIP PAN: 6 1/2 inches in diameter provided with cover. Cover is equipped with hasp which fits down over a lug on the tank, making it possible to lock this tank opening, thereby preventing pilfering.

GAUGE STICK: Metal, graduated in five gallons, inserted through pump plate

FINISH: Olive green

DIMENSIONS

Height	30 in
Width	21 in
Length	28 in
Approx. shipping weight of outfit	175 lbs

EQUIPMENT FURNISHED AT EXTRA COST

Gravity Emptying Device—Figure 134 Portable Barrel Drainer, chine hook, and chain hoist—To facilitate transferring oils from shipping containers into outfit tank

(For complete information see Accessories Bulletin Feature 134)

METER 156-B: Registers in quarts and gallons to 10,000 gallons and automatically repeats. Meter is attached to the driving mechanism of the pump so that every movement of the handle on the discharge stroke must be recorded and accounted for

(For complete information see Feature 156 B Accessory Bulletin)

1-Gallon Pump

Padlock—Padlock with 2 keys

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Figure 64 Outfit

Standard Figure 64 Single Unit, with Quart Pump Mounted on Either a 120 or 280 Gallon Tank.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

FIGURE 64 OUTFIT

BOWSER Figure 64 is a complete outfit for storing and dispensing lubricating oils and similar liquids. The standard Figure 64 consists of a piston type measuring pump of one quart capacity, mounted on a rectangular storage tank of either 120 or 280 gallons capacity.

This unit is especially designed and adapted for installation in battery form. Any number of these outfits, regardless of tank capacities, may be uniformly placed side by side because all tanks are of the same height and length, the difference being made up in the width. Thus complete facilities for handling any number of different oils are provided within a comparatively small floor space, and the oils may be had in any quantity at one convenient service point, centrally located, and easily and readily accessible.

A battery of Bowser 64's not only saves considerable floor space and time which is lost in going to distant and widely separated supplies, but it also provides an easy, simple, and quick method of handling and completely emptying the contents of shipping containers into the storage tanks. This type of installation presents a neat and business-like appearance. The illustration on opposite page shows a six-unit battery and will enable you to visualize how easily and profitably this type of installation will fit into any business.

The storage and distribution of all oils is accomplished without mess. Oil-soaked, slippery, dangerous floors are eliminated. Losses through leakage and seepage—failure to fully drain barrels—spilling by overflowing of measures, etc., and the necessity of occasionally throwing away small quantities of oil due to contamination because of lack of protection, are avoided. The oils are kept fresh and uniform in oil-tight, dust and water-proof outfits.

Gravity emptying devices, such as illustrated, enable one man to easily handle the heavy shipping containers and drain the oils into the storage tanks without spilling or wasting a drop. These devices are accessory to the standard 64's and are furnished at additional cost.

Pumps of either one quart or one gallon capacity can be furnished with Figure 64 outfits. (Quart pump standard. Gallon pump at small extra cost.) These pumps are accurate, easy-operating, and very rapid in service. Quart pump measures quarts, pints and half-pints. Gallon pump measures gallons, half-gallons, quarts and pints. Odd sized cans, bottles or containers of almost any description can be filled without overflowing. Anti-drip nozzle on pump prevents dripping—cuts off flow of oil quickly when pumping ceases.

The pump bracket and handle are equipped with eyelets to permit pad locking and prevent operation of pump.

PUMP FEATURES

The Figure 64 outfits are carefully designed and constructed to give satisfactory service for many years. Careful machining of high quality materials insures correct fitting, minimum wear, easy operation, accurate measurement and long life. In case of accidental damage to any part of the pump, replacement parts can be easily and quickly secured and installed.

After the entire outfit is completely assembled, it is inspected and tested with liquid, for leaky joints and defective materials.

Mechanical quantity stops, which control the length of the piston stroke for exact measurements, are adjusted, set and then sealed to accuracy by measuring liquid into calibrated measuring cans. These stops are easily set for the desired quantity by the movement of a lever which swings over a quantity indicator plate.

The **anti-drip nozzle** on the pump prevents dripping after pumping ceases. Nozzle tip is small enough to enter the opening of almost any receptacle.

Pump **bracket (T section)** is of heavy construction, guaranteeing easy, smooth, accurate operation of the cog rack and pinion.

Cut steel cog rack and pinion assist easy operation. Their snug fit and true lift of the piston insure accuracy of measurement and long wear.

The **piston** is packed with a specially treated leather, which is held against the inner wall of the cylinder by an expanding brass spring. This constant spring pressure prevents the possibility of any slippage of liquid past the plunger. Thus each stroke propels an exact quantity through the pump.

The pump **valves and valve seats** are made of

FIGURE 64 OUTFIT

A battery of six Figure 64 outfits equipped with gravity barrel emptying devices consisting of Chain Hoist, Barrel Track, Barrel Cradle and Barrel Dash.

The shipping containers are rolled onto the barrel cradle, raised by means of the chain hoist to the level of the top of the tanks, rolled along barrel track and onto barrel dash, which is placed in position above tank to be filled, and then allowed to drain completely. No effort, no danger, no mess, no loss.

steel—carefully ground and tested together to insure tight seating.

The **cylinder** is of one piece of seamless brass tubing.

TANK FEATURES

The tank is constructed of 14 gauge galvanized steel, assembled with riveted and soldered seams. All seams riveted—bottom and vertical seams soldered. The solder is sweated through the joints from inside to outside, producing a tank which will remain leak-proof permanently. Tanks of various capacities are made the same height and length to permit uniformity of installation when two or more units are placed in battery form. Difference in tank size is always made up in width.

Tanks are thoroughly inspected for defective materials and tested with liquid, to detect leaks.

Manhole 15" in diameter, with loose pressed steel cover provides an opening for filling and cleaning when necessary. A basket screen is fitted into the manhole to prevent scale and other foreign matter, which may be in the liquids, or shipping containers, from entering the tank. Cover with special locking arrangement can be furnished at small extra cost.

A **drip pan** 6¾" in diameter, with pressed steel grate sets flush with the top of the tank. Drip pan assembly is covered with a hinged metal cover, provided with eyelet for locking.

A **metal gauge stick**, graduated in five gallons, provides a means for determining contents of tank at any time.

FIGURE 64 OUTFIT

Specifications

STANDARD PUMP

CHARACTERISTICS: Piston type measuring; up stroke, easy operation, rapid discharge, accurate measurement, dust-proof.

MEASUREMENT: Measures one quart at each complete stroke., Quantity stops may be adjusted so that partial stroke will deliver pints and half-pints.

CONSTRUCTION DETAILS:
Bracket: T section, cast iron.
Rack and Pinion: Cold rolled steel, machine cut teeth.
Cylinder: Heavy, seamless, brass tubing.
Plunger: Poppet type.
Valves and Valve Seats: Poppet type, steel.

NOZZLE: Anti-drip type. 7/16" tip.

FINISH: Black enamel with nickel trimmings.

DIMENSIONS OF PUMP

Height over all with rack up (tank and pump	50½"
Height, top of tank to bottom of nozzle tip	16"

ACCESSORIES

(Furnished at extra cost)

METER: Figure 156-B, registers in gallons and quarts up to 10,000 and repeats.

GALLON PUMP: Measures one gallon, half-gallon, quart and pint.

PADLOCK: Individual lock with two keys.

STANDARD TANK

CAPACITY: 120 and 280 gallons.

TYPE: "B" rectangular.

CONSTRUCTION DETAILS: 14 gauge galvanized steel. All seams riveted on one-inch centers. Bottom and vertical seams soldered.

GAUGE STICK: Metal, graduated in five gallons.

MANHOLE: 15" diameter; loose pressed steel cover, basket screen.

DRIP PAN: 6½" diameter; pressed steel grate; hinged metal cover.

FINISH: Olive green, gold lettering.

ACCESSORIES

(Furnished at extra cost)

GRAVITY EMPTYING DEVICES: Barrel cradle, barrel dash, barrel track, chain hoist.

(For complete information see Accessories Bulletin.)

LOCKING MANHOLE COVER: For securely locking fill opening in tank.

CAPACITIES, DIMENSIONS AND OUTFIT SHIPPING WEIGHTS

Tank Capacity Gallons	OUTSIDE DIMENSIONS OF TANK			Shipping Weights in Pounds	
	Depth in Inches	Width in Inches	Length in Inches	Crate	Pump
120	29½	21"	50"	14	275
280	29½	47"	50"	14	420

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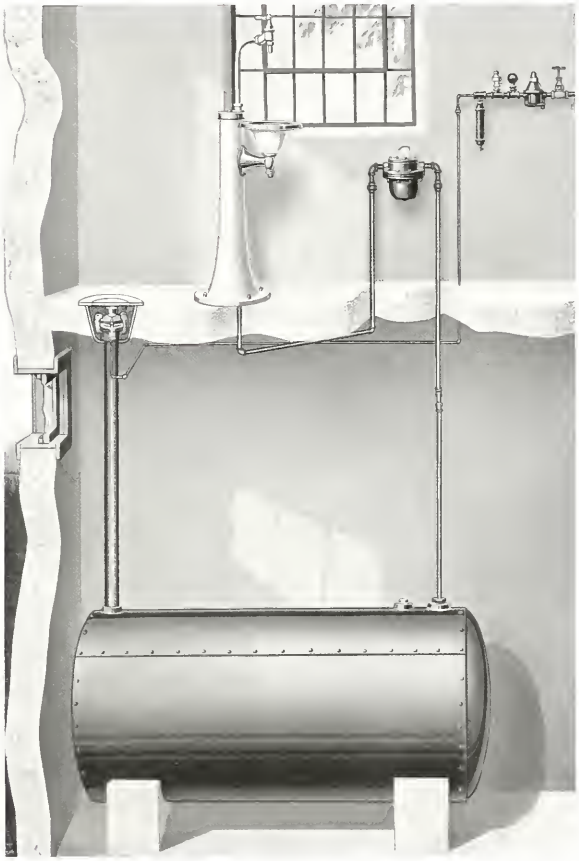
Oil Fountain



Representative installation of a Single Discharge Figure 85 Outfit complete with fittings

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS SYDNEY

BOWSER OIL FOUNTAIN [FIGURE 85]

THE Figure 85 Outfit is an air-operated unit for storing and dispensing lubricating oils and similar liquids, indoors. It can be furnished with either one, two, three, or four outlets on a single pedestal at the option of the user.

The liquids are at one central service point where they are easily available to those using them. They are withdrawn quickly. Time and labor are saved in not having to go to a distant supply and not having to wait for a quantity of the liquid to dribble and sputter out of makeshift devices.

Every drop of liquid that passes through the outfit is accurately measured and registered. Unauthorized withdrawals are discouraged.

The pedestal, which is finished in white porcelain and nickel, is very attractive. The surroundings and the liquids themselves are kept perfectly clean.

The operation of the outfit is very easy. Simply open the faucet and the flow of liquid starts—and closing the faucet stops the flow. The rate of discharge may be increased or decreased to suit the requirements.

The storage tank may be installed so that it can be filled either from the outside of the building or from the service floor.

FEATURES

The nozzle is quick acting. One-half turn completely opens or closes the valve. Small containers can be filled without overflowing. It is at a convenient height and the small nozzle tip provides for filling containers with small openings.

The bowl is for catching any liquid that may be accidentally spilled. It is fitted with a nickel-plated bowl top which is perforated. Any accumulation of liquid may be readily drawn off at any time.

The Bowser Xacto Meter is the measuring unit of the outfit. Every drop of liquid passing through the unit is first measured and recorded accurately, before it is discharged.

Air regulating accessories control the air pressure on the lines to the storage tank and remove the moisture from the compressed air. The liquids are not contaminated with moisture.

The tank is of rivet-weld construction. The seams are of single lap, hot riveted, with rivets fully headed both inside and outside. After riveting, the outside of each seam is electrically welded. This type of construction insures a leak-proof, fire-proof, dust-proof, and water-proof tank that will give many years of safe storage.

A safety fill cap is furnished to cap the fill pipe. It can be locked to prevent anyone from siphoning liquid out of the tank. When the cap is securely fitted to the fill pipe, a tight seat is formed to permit applying the necessary air pressure to handle the liquid.

After assembly the outfit is subjected to rigid inspection and tested for any leaky joints or defective materials. All parts are interchangeable so that in case of accidental damage any of the parts can be easily and quickly replaced.

OIL FOUNTAIN [FIGURE 85]

Double Discharge Figure 85 Fountain

OIL FOUNTAIN [FIGURE 85]

Specifications

FOUNTAIN

FINISH: Pedestal and bowls white porcelain enamel, other parts nickeled.

CHARACTERISTICS: Rapid discharge, fireproof; sturdy construction; graceful design; air-operated; dust and water proof.

SIZE: Single or double bowl fountain. (Fountain can be furnished with three or four bowls and outlets on special order. There must be a separate bowl, outlet, meter, and tank for each different kind of liquid handled.)

XACTO METER: For accurately measuring the liquids passing through the outfit. $\frac{3}{4}$" pipe size inlet and outlet. Capacity—maximum of 10 gallons a minute.

AIR CONTROL ASSEMBLY: Consists of water trap, pressure gauge, and combination relief and pressure reducing valve, for controlling air pressure.

**(For complete information on this equipment see Bulletins on Figure 764 Xacto Meter and Air Regulating Accessories.)*

DIMENSIONS OF FOUNTAIN

	Single Bowl	Double Bowl
Height over all	51 "	51 "
Width over all	22 $\frac{1}{4}$"	30 $\frac{1}{2}$"
Depth of bowl (inside)	4 $\frac{7}{8}$"	4 $\frac{7}{8}$"
Diameter of bowl (inside)	11 "	11 "
Space between nozzle tip and bowl top	12 $\frac{1}{4}$"	12 $\frac{1}{2}$"
Floor space	14 "	14 "

TANK

FINISH: Black enamel.

CAPACITY: 300 and 550 gallons.

TYPE: "C" Cylindrical.

CONSTRUCTION DETAILS: $\frac{1}{4}$" black steel, dished heads; rivet weld construction. Tested with 50 pounds pressure. Leak-proof.

GAUGE STICK: Graduated in inches.

GAUGE STICK CHART: For use with gauge stick to determine quantity of liquid in tank.

FITTINGS: Safety fill cap; $\frac{1}{8}$" angle valve and nipple for air connection into fill pipe.

DIMENSIONS OF TANK AND SHIPPING WEIGHT OF OUTFITS

	300 Gal.	550 Gal.
Diameter	38"	44"
Length	78"	103"
Shipping weight of outfit (Single bowl)	1100	1500
Shipping weight of outfit (Double bowl)	1115	1515

ACCESSORIES

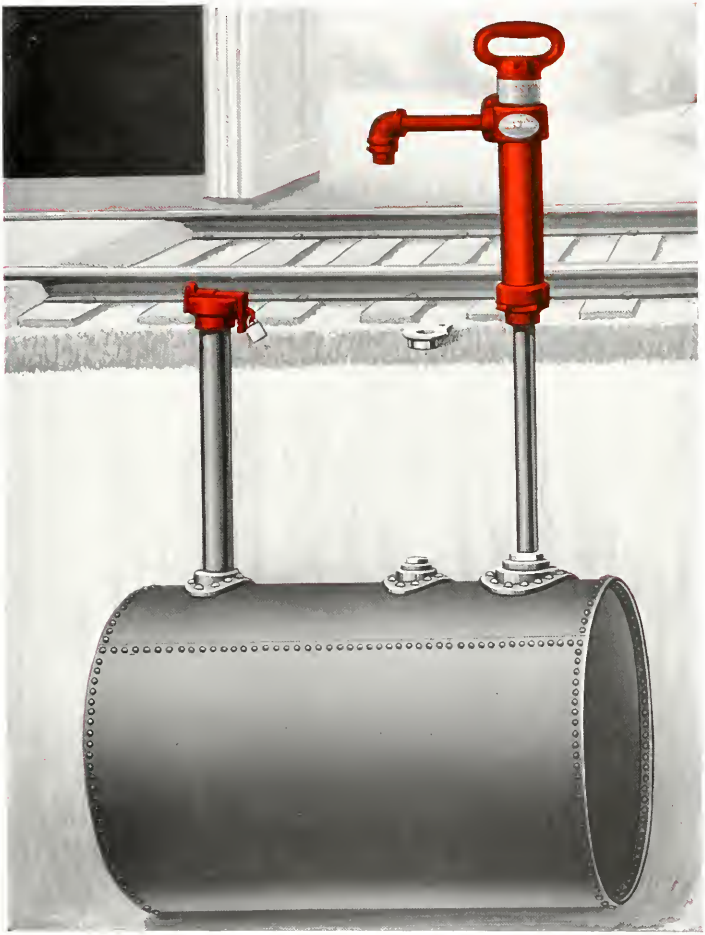
(Furnished at Extra Cost)

FILL BOX: Figure 175 for installation in concrete floor. Protects fill pipe and top is level with floor.

(For complete information see Accessories Bulletin.)

VERTICAL CHECK VALVE: 1".

Figure 94-A Outfit



REPRESENTATIVE INSTALLATION OF FIGURE 94-A OUTFIT

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

FIGURE 94-A OUTFIT

The Bowser Figure 94-A Outfit is especially designed for use by railroads in economically and efficiently handling kerosine, gasoline, longtime-burning oil and similar liquids at wayside points. The outfit consists of a non-measuring pump and a cylindrical, galvanized steel, evaporation-proof, storage tank in sizes ranging in capacity from 65 to 280 gallons.

Gasoline, kerosine, burning oils and similar liquids stored by railroads at points along the right-of-way represent a large investment. Loss from leakage and evaporation—loss in dispensing—loss incurred by damaged and lost drums—in fact any losses, no matter how small, which are due to inadequate handling facilities are worthy of the utmost consideration.

The Bowser Figure 94-A Outfit prevents all of these losses and reduces the fire hazard to a minimum. Leakage or evaporation are impossible as this outfit is air-tight and water-proof. The original quality of the liquid is maintained. Less time is required in handling—operation is fast and simple. There is no waste—slopping and spilling are entirely eliminated. Motor cars, lamps and other containers can be supplied with clean, fresh oil in a minimum of time and without waste. Shipping containers can be drained of their contents and returned promptly. Clerical work required in checking and following drums is reduced and a much more reliable record of consumption can be maintained.

Installation is very simple and can be done by an average section hand. Pump can be securely locked onto the suction pipe or can be detached when desired and suction pipe capped and locked with the extra solid lock cap furnished with the outfit. Pump can be installed inside or outside building. Tank is always buried underground.

The tank and pump are both labeled by the Underwriters' Laboratories.

Specifications

STANDARD EQUIPMENT

The standard Figure 94-A Outfit consists of a non-measuring pump and a cylindrical storage tank of galvanized steel construction in capacities ranging from 65 to 280 gallons.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Non-measuring, piston type, up stroke, easy operating; rapid discharge; fire and explosion proof. Can be removed when not in use, after pump cylinder has been emptied. (This is accomplished by simply turning handle until notch in handle corresponds with lug on cylinder top thus returning liquid to storage tank)

Pump can be permanently locked onto suction pipe or suction pipe can be securely locked, after pump is removed, by means of an extra solid lock fill cap furnished with the outfit.

CONSTRUCTION: Cylinder of seamless brass tubing; valves, valve seats, stuffing boxes, etc., of best material obtainable for their requirements. All pump parts are exceptionally heavy to insure long life. Check valve in bottom casting eliminates the necessity of priming each time pump is used.

UNDERWRITERS' LABEL:

Pump bears Underwriters' Label of approval for inside or outside use.

FINISH:

Red enamel

DIMENSIONS:

Height, over all	$17\frac{1}{2}$"
Height, suction rod extended	$25\frac{1}{2}$"
Width over all from back to end of discharge	11"
Shipping weight (pump only)	16 lbs.

TANK

TANK DETAILS:

TYPE: "C" Cylindrical.

MATERIAL: 14-gauge galvanized steel

CONSTRUCTION: Seams riveted and soldered, rivets spaced on 1" centers; solder flooded from inside to outside by an exclusive Bowser method. All tanks are tested under air pressure for any possible leaks or defects in material or workmanship.

FLANGES:

Suction $3\frac{1}{2}$"; fill and vent 2", one extra 2" flange with pipe plug.

SUCTION STUB:

Consists of 1" pipe with screw eye for lock cap (length depends upon depth of fill), coupling and nipple, and two elbows for use when pump is installed inside building. Solid lock fill cap furnished for securely locking suction pipe when pump is removed.

FILL PIPE:

Consists of 2" pipe of sufficient length to reach from tank to about 6" above ground (lengths greater than 5 feet furnished at extra cost) and solid lock fill cap for securely locking fill pipe.

GAUGE STICK:

Wood construction; graduated in gallons; for determining approximate amount of oil on hand.

UNDERWRITERS' LABEL:

Tank bears Underwriters' Label of approval for storing highly volatile liquids.

(For More Complete Information on Tanks, see Type "C" Tank Bulletin).

CAPACITIES, DIMENSIONS AND SHIPPING WEIGHTS OF STANDARD OUTFITS

Tank Capacity	Outside Dimensions		Standard Outfit Shipping Weight, Lbs (Approximate)
Gallons	Diameter in Inches	Length in Inches	14 Gauge
65	$31\frac{1}{2}$	23	160
120	$31\frac{1}{2}$	41	200
280	38"	$60\frac{1}{2}$	300

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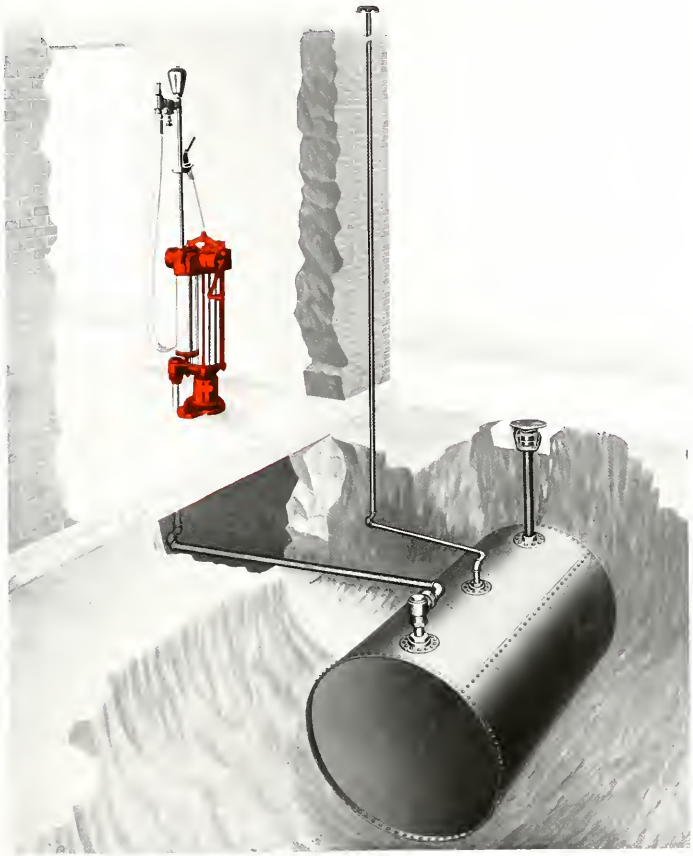
Figure 101-B Outfit



Representative Installation of a Standard Figure 101-B Outfit Complete with Five-Gallon Pump, Type "C" Tank and Fittings.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

BOWSER FIGURE 101-B OUTFIT

BOWSER Figure 101-B outfit is a complete system for storing and dispensing gasoline, benzine, and similar volatile liquids. It consists of a 5-gallon measuring pump, and a cylindrical, galvanized steel, evaporation-proof, tank.

This outfit is especially adapted for safely storing small or large quantities of highly volatile liquids underground, and economically dispensing them at any convenient point of service either indoors or outdoors.

The pump rapidly discharges five gallons at a complete stroke of the plunger, or any intermediate gallon quantities may be drawn by a simple adjustment of the quantity stops.

The speed in delivery is 18 to 20 G.P.M.—a gallon in less than 4 seconds with little effort. And even at this rate of discharge the measurement is constantly accurate and dependable. Each gallon quantity withdrawn is accurately recorded on the 20 gallon individual delivery counter and accumulated on the 100,000 gallon continuous recording meter, thus enabling a positive check to be kept on every movement of the liquids. Meter readings are always accurate and easily available when desired for bookkeeping purposes.

The pump is equipped with a centrifugal filter which eliminates all moisture and foreign matter and insures the delivery of a clean dry fuel which is highly essential when maximum results are to be obtained from volatile liquids. The sight glass, furnished for use when the pump is installed outside, gives visible assurance before pumping begins that the pump is full of liquid and that full measure will be delivered. When the pump is used inside a building, the sight glass is omitted so that it fully meets the requirements of the Underwriters' Laboratories.

In order to maintain accuracy in measurement the maximum vertical lift of liquid cannot exceed 12 feet. When a higher lift than this is necessary, a pump with drop cylinder, located within 12 feet of bottom of the storage tank, is substituted. This outfit is designated as Figure 101-B Drop Cylinder, and is illustrated on the opposite page.

In some cases it is more convenient and desirable to discharge liquids directly from the pump through a nozzle, instead of through a hose and nozzle. When this type of equipment is wanted, specify Figure 101-C as shown in illustration on next page.

PUMP FEATURES

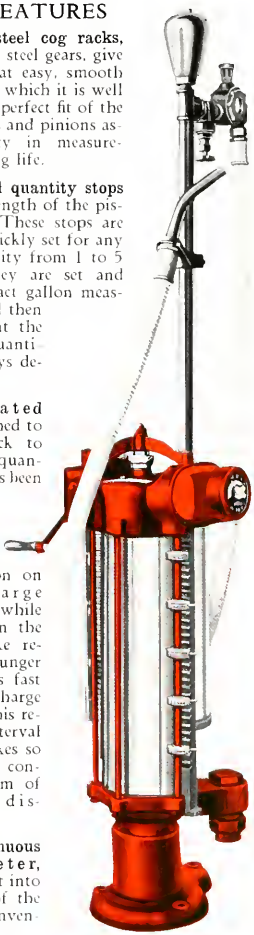
Two cut steel cog racks, driven by cut steel gears, give the pump that easy, smooth operation for which it is well known. The perfect fit of the cut steel racks and pinions assures accuracy in measurement and long life.

Mechanical quantity stops control the length of the piston stroke. These stops are easily and quickly set for any desired quantity from 1 to 5 gallons. They are set and tested for exact gallon measurements and then sealed so that the same exact quantities are always delivered.

A graduated scale is attached to each cog rack to indicate the quantity which has been discharged.

Low gear on the up stroke gives easy operation on the discharge stroke, — while **high gear** on the down stroke returns the plunger four times as fast as on the discharge stroke. This reduces the interval between strokes so that almost a continuous stream of liquid is discharged.

The continuous recording meter, which is built into the head of the pump at a conven-



STANDARD FIGURE 101-B PUMP

FIGURE 101-B OUTFIT

ient point for reading, records in gallons each quantity discharged, maintains a total of all deliveries to 100,000 gallons, at which time it repeats.

The discharge register also records each gallon discharged to a total of 20 gallons and then repeats. This register is used to tally the number of gallons discharged at each individual delivery—it may be returned to zero at any time.

A centrifugal filter is furnished standard with the pump to eliminate moisture and foreign matter and is installed in the suction line so that all liquid must pass through it before it is discharged.

A spring lock is inclosed in the head of the pump to prevent unauthorized withdrawals. Individual key for operation is furnished.

The hose draining attachment enables complete drainage of the hose to be accomplished quickly.

The 3" sight glass, located at the inlet of the hose, shows that the pump is full of liquid and indicates the color and flow of liquid.

STANDARD FIGURE 101-B DROP CYLINDER PUMP

The illustration at left shows a standard Figure 101-B drop cylinder pump with the measuring cylinder dropped to a point within 12 feet of the bottom of the storage tank. With this arrangement the pump may be located on most any upper floor with the liquid stored underground, and still be insured of accuracy in measurement, notwithstanding the long lift of liquid.

Ten feet of flexible, kinkless gasoline hose, lined with metal, prevents any static electricity which eliminates costly fires originating from that source.

The nozzle at the end of the hose is made of brass so that the outfit is safeguarded against fire which could easily be the result of a spark caused by the nozzle striking other metal.

Expansion chamber at the top of the discharge pipe takes care of rises in temperature of liquid.

The pump is approved by the **Underwriters' Laboratories** and bears their label for safe handling of volatile liquids.

STANDARD FIGURE 101-C PUMP

TANK FEATURES

The tanks furnished standard with the Figure 101-B outfit vary in capacity from 120 gallons to 1,000 gallons. These tanks are made of heavy galvanized steel and are riveted and soldered throughout. Full description is given in the bulletin on light tanks type "C". Heavier tanks of larger capacities may be furnished. These are covered in our descriptive bulletins on heavy type "B" or "C" tanks.

A gauge stick, graduated in inches—with chart—is furnished standard with the tank so that the approximate quantity of liquid on hand can be determined at any time.

An Underwriters' Label is attached to each tank showing that it has been approved by the Underwriters' Laboratories as being safe for handling volatile liquids.

Line valve with seat and poppet ground and tested together to insure tight seating, is furnished for installation in the suction line, above the tank. This holds the suction line full of liquid—so that the first quantity discharged will be just as accurate as any subsequent quantities.

FIGURE 101-B OUTFIT

Specifications

STANDARD PUMP

FINISH: Red enamel with nickeled cylinder and trimmings.

CHARACTERISTICS: Piston type measuring, easy operation; rapid discharge (18 to 20 gallons per minute) patented quick return feature; fire- and explosion-proof; accurate measurement.

MEASUREMENT: Measures five gallons at each complete stroke. Quantity stops may be adjusted so that a partial stroke will deliver intermediate gallons.

CONSTRUCTION DETAILS:
Racks and Pinions: Cold rolled steel, machine cut teeth.
Cylinder: Heavy, seamless, brass tubing, nickel plated.
Plunger: Poppet type.
Valve and Valve Seats: Poppet type, brass.

MAXIMUM LIFT, STANDARD PUMP: 12-ft. vertically.

METER: Records in gallons to 100,000 gallons and repeats.

DIAL DISCHARGE REGISTER: Counts to 20 in gallons and repeats. May be returned to zero at will of operator.

FILTER: Centrifugal water filter removes all moisture and foreign matter.

LOCK: Spring lock inclosed in pump head. Requires individual keys to operate.

LINE VALVE: Single poppet type. Seat and poppet, brass. Seat removable. For installation above tank.

HOSE: 10 feet of 1¼" metal lined, flexible, kinkless, gasoline hose.

NOZZLE: Brass.

AIR CHAMBER: Provides for any expansion of the liquid in the pump.

HOSE DRAINING ATTACHMENT: Facilitates complete drainage of the hose.

DOUBLE GRADUATED SCALE: Graduated in gallons. Fitted to cog racks to accurately determine quantities discharged on partial stroke.

UNDERWRITERS' LABEL: Approving standard pump for inside or outside installation.

GENERAL SPECIFICATIONS

Height over all	7′ 7″
Floor space required	15″x15″
Suction pipe	2″
Shipping weight (approximate)	365 lbs.

STANDARD TANK

TANK AND FITTINGS: Standard Type "C" galvanized cylindrical furnished in 120, 280, 550, or 1,000 gallons capacities. All necessary fittings including flanges, suction and fill pipes, are furnished standard with the tank.
(For complete information see Type "C" Tank Bulletin.)

ACCESSORIES

(Furnished at extra cost)

FILL BOXES: Figures 158, 174, and 175. Used as protective covers for fill pipe.

STORAGE INDICATOR: Figure 202-B. Indicates approximate quantity in tank.
(For complete information on above items see Accessories Bulletin.)

MANHOLE: To permit installation of Storage Indicator.

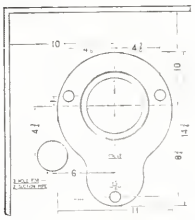
FILL PIPE OVER 5 FEET.

PIPE AND FITTINGS: For connecting pump to tank.

NOTE

The specifications, standard equipment, general specifications and accessories for the drop cylinder outfit are the same as for the standard outfit.

The additional pipe and plunger rod required for installation of the pump more than 12 feet above the cylinder top are furnished at small extra cost. Up to 12 feet is furnished standard with the outfit.



Foundation Plan Figure 101-B Pump

Revision
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1-10-2-31-4047

Figure 109 Outfit

STANDARD FIGURE 109 OUTFIT

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

FIGURE 109 OUTFIT

THE Standard Figure 109 is a complete unit for storing and dispensing paint oils, varnishes and other similar liquids. It consists of a measuring pump of one gallon capacity mounted on a rectangular storage tank of galvanized steel construction.

The outfit provides a safe, convenient and economical means of storing and dispensing the liquids mentioned and presents a neat and orderly appearance.

The tank is of leak and evaporation-proof construction. Liquids are thus afforded protection against loss from either of these sources and are maintained in their original state of quality. A fresh, clean supply in any desired quantity is always readily available through the quick acting, easy operating pump which measures pints, quarts, half gallons and gallons.

A battery of these outfits for handling several liquids and as illustrated on the opposite page, provides a clean and efficient service and centralizes the handling of various liquids at a conveniently situated point. A minimum amount of floor space is required and unnecessary steps to and from distant sources of supply are eliminated.

Use of this equipment prevents the unsightliness of "gummed up" measures and funnels and the existence of oil-soaked rags and waste which constitute a dangerous fire hazard.

By means of barrel draining equipment, shipping containers are easily, quickly and completely drained. Loss occasioned by failure to completely drain containers is thereby eliminated.

A recording meter which can be easily attached, provides an accurate record of all deliveries from the tank. It eliminates errors and provides the basis for more accurate cost and inventory records. It is not a standard part of the outfit but is furnished when desired at small additional cost. A discharge register furnished as standard equipment records each full stroke of the plunger to ten, and repeats.

The Figure 109 Outfit is regularly examined and listed by the Underwriters' Laboratories for the degree of safety which it provides. Each outfit is constructed of materials which conform strictly with the requirements of the liquid for which the outfit is to be used.

PUMP FEATURES

The pump is of the latest piston type design, sturdily constructed throughout to give rapid, accurate, economical and uninterrupted service.

Each part of the pump is carefully machined and inspected, after which the entire pump assembly is tested with liquid, under pressure, for leaky joints.

The heavy, grey iron bracket is rigid, insuring easy, smooth operation of the cog rack and driving pinions.

The cylinder is of one piece of seamless brass tubing—no seams or joints to cause trouble.

The plunger is fitted with a formed cup leather especially treated for the liquid being handled. The leather is held against the cylinder walls by an expanding brass spring. This prevents any slippage of liquid past the plunger. Each stroke of the handle propels an exact quantity of liquid through the pump.

The valves and valve seats are of materials suitable for the liquid to be handled. These parts are ground and tested together to insure tight seating which eliminates any leakage back through the valves.

The cog rack and driving pinions are of cold rolled steel with machine cut teeth. This insures a perfect fit, ease of operation and long life.

Quantity stops for half-gallons, quarts and pints are adjusted by liquid tests to accuracy. By simply setting an indicator at the desired amount, correct quantities are accurately delivered.

The anti-drip shut-off nozzle prevents any further flow of liquid when closed. It is also air-tight to prevent evaporation.

The discharge register on the pump enables the operator to know the exact number of complete strokes made in any one pumping operation. It records in gallons to 10 and then automatically repeats.

Expansion chamber at the top of the discharge pipe, protects the pump from rises in temperature of the liquid being handled.

The tube funnel is attached to the nozzle on the pump and is of a sufficient length to be placed into the opening of containers sitting on the tank.

FIGURE 109 OUTFIT

A battery of six Figure 109 Outfits equipped with barrel draining devices consisting of chain hoist, barrel track, barrel cradle and barrel dash.

The shipping containers are rolled onto the barrel cradle, raised by means of the chain hoist to the level of the top of the tanks, rolled along the barrel track and onto barrel dash, which is placed in position above the tank to be filled. The barrel is allowed to drain completely and the process is accomplished without effort, danger, mess or loss.

TANK FEATURES

The tank is made of heavy galvanized steel finished in olive green with gold lettering. All seams in this tank are carefully riveted and soldered, making it permanently leak- and evaporation-proof.

After the tank is completed it is subjected to a liquid pressure test so that the slightest leak may be detected and corrected.

Manhole 15" in diameter provides accessible means for cleaning when necessary. The cover contains a small opening for filling. This opening has a tube running to the bottom of the tank, thus sealing the contents against air. When a battery of these outfits is equipped with barrel draining accessories, a fill pan is furnished—thus preventing spillage during the emptying process.

Gauge stick—graduated every five gallons—shows approximate amount of oil on hand at all times. Metal construction and secured to the screw cap. Opening for gauge stick also has tube running to bottom of tank to prevent air from entering tank at this point.

Agitators can be provided at small extra cost when desired. They provide thorough agitation of liquids, thus keeping them in the highest state of quality.

FIGURE 109 OUTFIT

Specifications

STANDARD EQUIPMENT

The Figure 109 Paint Oil and Varnish Storing and Dispensing Outfit consists of a measuring pump mounted on a galvanized steel rectangular storage tank.

PUMP

PUMP DETAILS:

CHARACTERISTICS. Piston type measuring up stroke, accurate measurement, easy operation, fire and explosion-proof.

MEASUREMENT. Gallon, half-gallon, quart or pint. Complete stroke of piston displaces one gallon while half-gallons, quarts or pints may be discharged by setting positive stops. All quantity stops accurately tested and sealed before shipment.

CONSTRUCTION. Cog Rack. Cold rolled steel, teeth machine cut. Pump Bracket. Cast iron. Driving Pinion. Cold rolled steel, teeth machine cut. Cylinder. Seamless brass tubing. Valves. Material suitable to liquid handled.

DISCHARGE REGISTER:

Records complete gallons delivered up to ten and repeats. May be returned to zero when desired.

CARD HOLDERS:

Furnished standard with each pump. They permit labeling each pump with name of liquid being handled.

NOZZLE:

Anti-drip, shut off.

AIR CHAMBER:

Provides for any expansion of the liquid in the pump.

TUBE FUNNEL:

16" long.

FINISH:

Black enamel with nickeled trimmings.

DIMENSIONS:

Height over all with rack up (pump and tank) 65"
Height top of tank to bottom of nozzle tip 25½"

TANK

TANK DETAILS:

CAPACITY. 65, 120, 280 and 550 gallons.

TYPE. "B" rectangular.

CONSTRUCTION: 12 and 14 gauge galvanized steel. All seams riveted on one-inch centers, bottom soldered from inside to outside. Other seams soldered on outside. Permanently leak-proof.

GAUGE STICK:

Secured to screw cap, steel construction, graduated every five gallons.

MANHOLE:

15" diameter with bolted cover, 3½" opening for filling. Bar plug provided for this opening. Manhole cannot be furnished on one-barrel tank.

DRIP PAN:

6" diameter. Poppet valve furnished for closing return opening. Evaporation-proof. Cast iron removable grate.

VENT:

Special two-way vent with valves to prevent mixing of vapors.

FILL PAN:

15" diameter furnished free with each three tanks or less when barrel track is ordered.

FINISH:

Olive green, gold lettering.

SPECIAL TANKS:

When required to meet specific conditions, tanks can be furnished in dimensions other than those given here. Special lined tanks also available for handling certain liquids.

EQUIPMENT FURNISHED AT EXTRA COST

METER:

Figure 156-B registers in quarts and gallons to 10,[illegible] and repeats.

MANHOLE COVER LOCK:

For securely locking fill opening in tank.

AIR VENT PROTECTOR:

Figure 164.

GRAVITY EMPTYING DEVICES:

Barrel cradle, barrel dash, barrel track, chain hoist. Portable barrel drainer Figure 134. Barrel Chine Hook.

AGITATORS:

Figure 138 for thoroughly mixing liquids in which properties have tendency to separate.

(For more complete information see Accessories Bulletin Figures 137 and 138.)

CAPACITIES, DIMENSIONS AND SHIPPING WEIGHTS OF STANDARD OUTFITS

Tank Capacity	Outside Dimensions of Tank			Shipping Weight Pounds Standard Outfit
Gallons	Height Inches	Width Across Front Inches	Length Front to Back Inches	14 Gauge
65	29	21	28	255
120	29	21	50	365
[illegible]	29	47	50	545
[illegible]	29	93	50	955-12 ga

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Figure 109 Outfit

STANDARD FIGURE 109 OUTFIT

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

FIGURE 109 OUTFIT

THE Standard Figure 109 is a complete unit for storing and dispensing paint oils, varnishes and other similar liquids. It consists of a measuring pump of one gallon capacity mounted on a rectangular storage tank of galvanized steel construction.

The outfit provides a safe, convenient and economical means of storing and dispensing the liquids mentioned and presents a neat and orderly appearance.

The tank is of leak and evaporation-proof construction. Liquids are thus afforded protection against loss from either of these sources and are maintained in their original state of quality. A fresh, clean supply in any desired quantity is always readily available through the quick acting, easy operating pump which measures pints, quarts, half gallons and gallons.

A battery of these outfits for handling several liquids and as illustrated on the opposite page, provides a clean and efficient service and centralizes the handling of various liquids at a conveniently situated point. A minimum amount of floor space is required and unnecessary steps to and from distant sources of supply are eliminated.

Use of this equipment prevents the unsightliness of "gummed up" measures and funnels and the existence of oil-soaked rags and waste which constitute a dangerous fire hazard.

By means of barrel draining equipment, shipping containers are easily, quickly and completely drained. Loss occasioned by failure to completely drain containers is thereby eliminated.

A recording meter which can be easily attached, provides an accurate record of all deliveries from the tank. It eliminates errors and provides the basis for more accurate cost and inventory records. It is not a standard part of the outfit but is furnished when desired at small additional cost. A discharge register furnished as standard equipment records each full stroke of the plunger to ten, and repeats.

The Figure 109 Outfit is regularly examined and listed by the Underwriters' Laboratories for the degree of safety which it provides. Each outfit is constructed of materials which conform strictly with the requirements of the liquid for which the outfit is to be used.

PUMP FEATURES

The pump is of the latest piston type design, sturdily constructed throughout to give rapid, accurate, economical and uninterrupted service.

Each part of the pump is carefully machined and inspected, after which the entire pump assembly is tested with liquid, under pressure, for leaky joints.

The heavy, grey iron bracket is rigid, insuring easy, smooth operation of the cog rack and driving pinions.

The cylinder is of one piece of seamless brass tubing—no seams or joints to cause trouble.

The plunger is fitted with a formed cup leather especially treated for the liquid being handled. The leather is held against the cylinder walls by an expanding brass spring. This prevents any slippage of liquid past the plunger. Each stroke of the handle propels an exact quantity of liquid through the pump.

The valves and valve seats are of materials suitable for the liquid to be handled. These parts are ground and tested together to insure tight seating which eliminates any leakage back through the valves.

The cog rack and driving pinions are of cold rolled steel with machine cut teeth. This insures a perfect fit, ease of operation and long life.

Quantity stops for half-gallons, quarts and pints are adjusted by liquid tests to accuracy. By simply setting an indicator at the desired amount, correct quantities are accurately delivered.

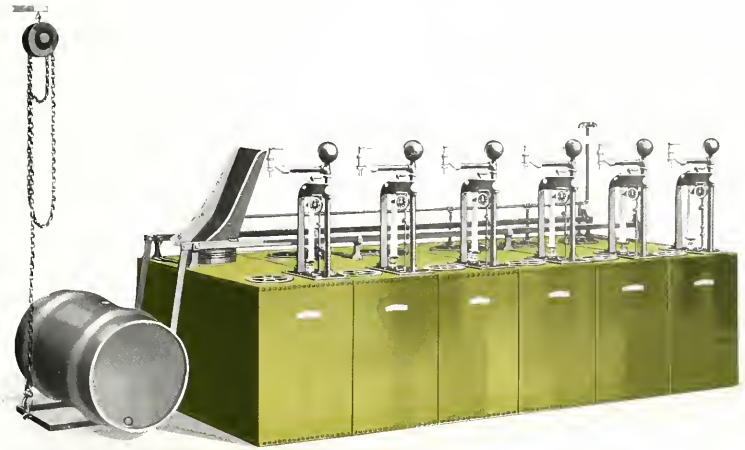
The anti-drip shut-off nozzle prevents any further flow of liquid when closed. It is also airtight to prevent evaporation.

The discharge register on the pump enables the operator to know the exact number of complete strokes made in any one pumping operation. It records in gallons to 10 and then automatically repeats.

Expansion chamber at the top of the discharge pipe, protects the pump from rises in temperature of the liquid being handled.

The tube funnel is attached to the nozzle on the pump and is of a sufficient length to be placed into the opening of containers sitting on the tank.

FIGURE 109 OUTFIT



A battery of six Figure 109 Outfits equipped with barrel draining devices consisting of chain hoist, barrel track, barrel cradle and barrel dash.

The shipping containers are rolled onto the barrel cradle, raised by means of the chain hoist to the level of the top of the tanks, rolled along the barrel track and onto barrel dash, which is placed in position above the tank to be filled. The barrel is allowed to drain completely and the process is accomplished without effort, danger, mess or loss.

TANK FEATURES

The tank is made of heavy galvanized steel finished in olive green with gold lettering. All seams in this tank are carefully riveted and soldered, making it permanently leak- and evaporation-proof.

After the tank is completed it is subjected to a liquid pressure test so that the slightest leak may be detected and corrected.

Manhole 15" in diameter provides accessible means for cleaning when necessary. The cover contains a small opening for filling. This opening has a tube running to the bottom of the tank, thus sealing the contents against air. When a battery of these outfits is equipped with barrel draining accessories, a fill pan is furnished—thus preventing spillage during the emptying process.

Gauge stick—graduated every five gallons—shows approximate amount of oil on hand at all times. Metal construction and secured to the screw cap. Opening for gauge stick also has tube running to bottom of tank to prevent air from entering tank at this point.

Agitators can be provided at small extra cost when desired. They provide thorough agitation of liquids, thus keeping them in the highest state of quality.

FIGURE 109 OUTFIT

Specifications

STANDARD EQUIPMENT

The Figure 109 Paint Oil and Varnish Storing and Dispensing Outfit consists of a measuring pump mounted on a galvanized steel rectangular storage tank.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Piston type measuring; up stroke; accurate measurement; easy operation; fire and explosion proof.

MEASUREMENT: Gallon, half gallon, quart or pint; complete stroke of piston displaces one gallon while half gallons, quarts or pints may be discharged by setting positive stops. All quantity stops accurately tested and sealed before shipment.

CONSTRUCTION: Cog Rack: Cold rolled steel; teeth machine cut. Pump Bracket: Cast iron. Driving Pinion: Cold rolled steel; teeth machine cut. Cylinder: Seamless brass tubing. Valves: Material suitable to liquid handled.

DISCHARGE REGISTER:

Records complete gallons delivered up to ten and repeats. May be returned to zero when desired.

CARD HOLDERS:

Furnished standard with each pump. They permit labeling each pump with name of liquid being handled.

NOZZLE:

Anti drip; shut-off.

AIR CHAMBER:

Provides for any expansion of the liquid in the pump.

TUBE FUNNEL:

16" long.

FINISH:

Black enamel with nickeled trimmings.

DIMENSIONS:

Height over all with rack up (pump and tank) 65"
Height: top of tank to bottom of nozzle tip 25½"

TANK

TANK DETAILS:

CAPACITY: 65, 120, 280 and 550 gallons.

TYPE: "B" rectangular.

CONSTRUCTION: 12 and 14 gauge galvanized steel. All seams riveted on one-inch centers, bottom soldered from inside to outside. Other seams soldered on outside. Permanently leak-proof.

GAUGE STICK:

Secured to screw cap; steel construction, graduated every five gallons.

MANHOLE:

15" diameter with bolted cover; 3½" opening for filling. Bar plug provided for this opening. Manhole cannot be furnished on one-barrel tank.

DRIP PAN:

6" diameter. Poppet valve furnished for closing return opening. Evaporation-proof. Cast iron removable grate.

VENT:

Special two-way vent with valves to prevent mixing of vapors.

FILL PAN:

15" diameter; furnished free with each three tanks or less when barrel rack is ordered.

FINISH:

Olive green; gold lettering.

SPECIAL TANKS:

When required to meet specific conditions, tanks can be furnished in dimensions other than those given here. Special lined tanks also available for handling certain liquids.

EQUIPMENT FURNISHED AT EXTRA COST

METER:

Figure 156 B registers in quarts and gallons to 10,000 and repeats.

MANHOLE COVER LOCK:

For securely locking fill opening in tank.

AIR VENT PROTECTOR:

Figure 164.

GRAVITY EMPTYING DEVICES:

Barrel cradle; barrel dash; barrel truck; chain hoist; Portable barrel drainer Figure 134; Barrel Chine Hook.

AGITATORS:

Figure 138 for thoroughly mixing liquids in which properties have tendency to separate.

(For more complete information see Accessories Bulletin Figures 137 and 138.)

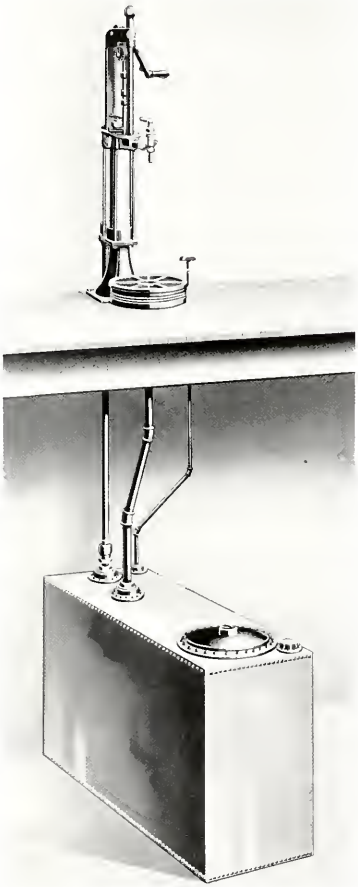
CAPACITIES, DIMENSIONS AND SHIPPING WEIGHTS OF STANDARD OUTFITS

	TANK			SHIPPING WEIGHT POUNDS STANDARD OUTFIT
	Width	Length	14 Gauge	
65	14	24	20	255
120	14	24	30	365
280	27	42	60	545
550	27	63	90	955 12 ga

BOWSER

Reg. U. S. & Can. Pat. Off.

Figure 115 Outfit



Representative Installation of Figure 115 Outfit, Complete with Pump, Tank and Fittings

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

FIGURE 115 OUTFIT

THE Standard Figure 115 Outfit is a complete unit for storing and dispensing paint oils, lubricating oils and other non-volatile liquids of a similar nature. It consists of a measuring pump of one gallon capacity and a rectangular storage tank of galvanized steel construction.

This outfit is especially designed for use where it is desirable to place the pump on the service or sales floor and the tank in the basement or a pit located under the floor. It is intended for battery use where a number of various liquids are to be handled, although it may be used as a single unit if desired.

The tank is constructed in such a manner as to be absolutely evaporation proof. Liquids are thus afforded protection against loss from this source and subsequent gumming and the accumulation of foots and fats, common with paint oils which are not properly stored.

The pump is of the quick acting, easy operating type and accurately measures pints, quarts, half-gallons and gallons.

It is equipped with a tight closing, anti-drip, shut-off nozzle which positively prevents dripping or evaporation.

The discharge register records each full stroke of the plunger to ten, and repeats. It may be returned to zero when desired. A continuous recording meter, furnished at small additional cost, records every withdrawal and provides an accurate basis for the maintenance of cost and inventory records. It records to 10,000 gallons and repeats. The pump is finished in black enamel with nickeled trimmings.

A number of these outfits arranged in battery form as illustrated on the opposite page, present a neat and business-like appearance and make possible the dispensing of a number of various oils at one conveniently located point. A minimum of floor space is required and trips to and from distant and widely separated sources of supply are eliminated.

By means of barrel draining equipment consisting of barrel cradle, barrel dash, barrel truck and chain hoist, as illustrated, shipping containers, when received, are easily and quickly drained. This process is easily accomplished by one man and without any loss due to spillage or failure to completely drain containers.

Additional units can be easily added to the battery as needed, it being necessary, only, to add sufficient barrel track to accommodate the extra tanks.

Compare and contrast the method of oil storage and handling described in the foregoing paragraphs with the old drum and barrel method. No measures—no oil-soaked floors—no overflowed cans—no oil-soaked rags or waste. Danger from fire and explosion are entirely eliminated. A Bowser outfit has never been known to start a fire or contribute its contents to one.

The Figure 115 Outfit is listed by the Underwriters' Laboratories as a safe means of storing and dispensing paint oils, lubricating oils and other non-volatile liquids. Each outfit is constructed of materials which conform to the requirements of the liquid to be handled and it is important that the names of such liquids be given when ordering.

In summary, a battery of these outfits performs a complete and distinct service for the safe handling of paint oils, lubricating oils and similar liquids in the most convenient and economical manner.

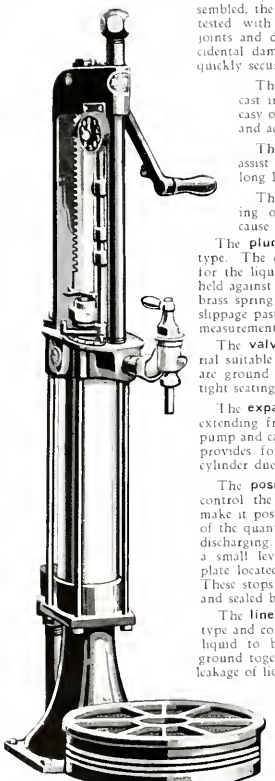


FIGURE 115 PUMP

PUMP FEATURES

The pump is designed and constructed to render many years of satisfactory and uninterrupted service. All materials are of the best quality, carefully machined, inspected and assembled by expert workmen. After being assembled, the pump is thoroughly inspected and tested with liquid under pressure for leaky joints and defective material. In event of accidental damage, new parts can be easily and quickly secured and installed.

The **bracket** is constructed of heavy cast iron—it's rigidity insuring smooth, easy operation of the cog rack and pinion and accurate measurement of the pump.

The **cog rack and pinion** of cut steel assist easy operation and further insure long life and durability.

The **cylinder** is of seamless brass tubing of the best quality—no seams to cause trouble.

The **plunger** is of the spring and leather type. The cupped leather is especially treated for the liquid to be handled. It is constantly held against the cylinder wall by the expanding brass spring, preventing the possibility of any slippage past the plunger and assuring accurate measurement.

The **valves and valve seats** are of material suitable to the liquid to be handled. All are ground and tested together, thus assuring tight seating and preventing leakage.

The **expansion chamber** consists of a tube extending from the cylinder to the top of the pump and capped with a hollow iron ball. This provides for any expansion of liquid in the cylinder due to changes in temperature.

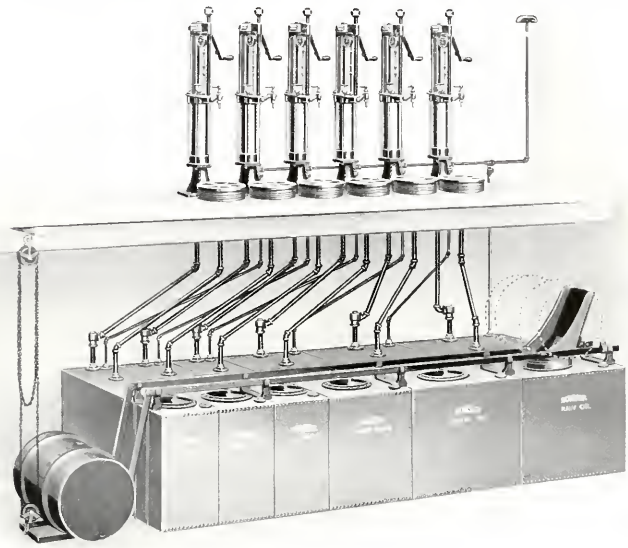
The **positive mechanical quantity stops** control the length of the piston stroke and make it possible to accurately measure any one of the quantities which the pump is capable of discharging. These stops are set by adjusting a small lever which swings over a quantity plate located on the top of the cylinder head. These stops are set for accuracy in our factory and sealed before shipment.

The **line valve** is of the single, flat, poppet type and constructed of material suitable to the liquid to be handled. Poppet and seat are ground together to assure tight fit and prevent leakage of liquid from pump back to tank, further assuring accurate measurement. The line valve is to be installed above the tank.

The **discharge register** records complete gallons to ten and repeats. It may be returned to zero when desired. This device eliminates errors when recording a considerable number of strokes.

BOWSER

FIGURE 115 OUTFIT



A battery of Figure 115 Pumps located on the sales or service floor with tanks installed in the basement. Illustration shows tanks equipped with Barrel Track, Barrel Dash, Barrel Cradle, Chain Hoist, Fill Pan, Vent Pipe and Air Vent Protector.

The **locking arrangement** provided on this pump consists of eyelets cast into the pump bracket and crank handle. When the crank handle is in the down position a padlock can be placed through these eyelets, thus securely locking the pump against unauthorized withdrawals.

The **discharge nozzle** is of the anti-drip type with shut-off. Flow of liquid stops immediately when pumping ceases and there is no dripping afterwards. Nozzle is of highly polished nickel plate construction. Tip is small enough to enter any ordinary opening.

Card Holders included with each pump. The card holders permit labeling each pump with the name of liquid handled, thereby eliminating any possibility of error in choosing the wrong kind of liquid.

The **tube funnel** furnished with the pump is of a sufficient length for easily filling containers which will not conveniently hang on the pump.

TANK FEATURES

The storage tank is constructed of heavy galvanized steel and finished in olive green with gold lettering. Seams are carefully riveted and soldered, making the tank positively leak- and evaporation-proof.

After being assembled the tank is thoroughly tested with liquid under pressure to detect any leaks which might appear.

The **manhole** provides accessibility to the inside of the tank when cleaning becomes necessary. This opening is provided with a cast iron cover which is bolted to the tank and made absolutely tight by means of a gasket between the tank and cover. The cover contains a 3½ in. opening for filling.

Inside piping in the tank includes a pipe extending to the bottom of the tank for the suction line, return line, fill and gauge stick openings. All openings into the tank are accordingly liquid sealed preventing evaporation and subsequent gumming and the formation of foots and fats.

The **gauge stick** is secured to a screw cap and provides an easy and accurate means of determining the approximate amount of oil on hand at any time.

The **fill pan** is furnished standard with each three outfits or less when barrel track is ordered. By means of this device, barrels can be emptied without any loss due to spillage.

The **vent** is of a special design fitted with both inlet and outlet valves, permitting the passage of air only under pressure. This vent permits free passage of air when the tank is receiving a new supply of liquid and allows air to replace liquid withdrawn. A screened air vent protector prevents dirt particles and sparks from entering the vent line.

FIGURE 115 OUTFIT

Specifications

STANDARD EQUIPMENT

The standard Figure 115 Outfit consists of a measuring pump of one gallon capacity and a rectangular storage tank of galvanized steel construction, in capacities of 120, 280 and 550 gallons.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Piston type measuring, up stroke; accurate measurement, easy operation, fire- and explosion-proof.

MEASUREMENT: Measures one gallon at each complete stroke of the plunger; quantities of half gallon, quart or pint controlled by setting the positive intermediate quantity stops.

CONSTRUCTION: Cog rack and driving pinion of cold rolled steel with teeth machine cut, pump bracket of cast iron, cylinder of seamless brass tubing, valves of material suitable to liquid to be handled, plunger of spring and leather type, fitted with special leather according to liquid handled.

AIR CHAMBER: Provides for any expansion of liquid in the pump.

DISCHARGE REGISTER: Records complete gallons delivered, up to ten and repeats, may be returned to zero when desired.

DISCHARGE NOZZLE: Anti-drip type with shut-off valve.

CARD HOLDERS: Furnished standard with each pump. They permit labeling each pump with name of liquid handled.

DRIP PAN: 15 in. diameter, fitted with return connection for pipe leading back to tank, poppet valve inserted in opening for return line.

TUBE FUNNEL: 16 in. long for filling containers which will not hang on pump.

LINE VALVE: Specially ground with single poppet.

FINISH: Black enamel, with nickeled trimmings.

DIMENSIONS:

Height over all	4 ft. 7 in.
Height over all, cog bar extended	5 ft. 6 in.
Height from floor to bottom of nozzle tip	2 ft. 4 in.

TANK

TANK DETAILS:

CAPACITY: 120, 280 and 550 gallons.

TYPE: "B" rectangular.

CONSTRUCTION: 120 and 280 gallon tanks of 14-gauge steel and 550 gallon tank of 12-gauge steel; all seams riveted on 1 in. centers, bottom seams soldered from inside to outside, other seams soldered on outside.

MANHOLE: 15 in. diameter; provided with bolted cover, made air-tight with gasket, 3½ in. opening for filling, bar plug provided for fill opening.

FILL PAN: 15 in. diameter, furnished standard with each three outfits or less when barrel truck is ordered.

VENT: Special two-way type.

INSIDE PIPING: Pipe and fittings for inside the tank are furnished, with couplings terminating just above the tank for both suction and return lines; tube extending to the bottom of the tank is also provided for the fill and gauge stick openings.

GAUGE STICK: Secured to screw cap, steel construction, graduated every five gallons.

FINISH: Olive green with gold lettering.

EQUIPMENT FURNISHED AT EXTRA COST

GRAVITY EMPTYING DEVICES: Barrel cradle, barrel dash, barrel truck, chain hoist, portable barrel drainer Figure 134, barrel skid and drainer Figure 135 B.

METER: Figure 156-B registers in quarts and gallons to 10,000 gallons and repeats.

AGITATORS: Figure 138 for thoroughly stirring contents of tanks.

(For complete information on above items see Accessories Bulletins.)

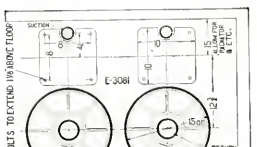
SPECIAL LINED OUTFITS: Hot galvanized outfits wood lined and tin lined tanks for liquids which cannot be stored in standard tanks.

AIR VENT PROTECTOR: Figure 164 for protecting opening to vent pipe.

PADLOCK AND KEYS: For securely locking handle of pump.

MANHOLE COVER LOCK: For locking fill opening in tank.

TANK CAPACITY	OUTSIDE DIMENSIONS OF TANK			SHIPPING WEIGHT OF PUMP AND TANK (Approx.)	
Gallons	Depth Top to Bottom	Width Across Front	Length Front to Back	14 Ga.	12 Ga.
120	36"	1'-7"	50"	405	
280	36"	3'-9"	50"	550	
550	36"	7'-6"	50"		895
Shipping Weight of Pump Only (approx.)				135 Pounds	



FLOOR PLAN

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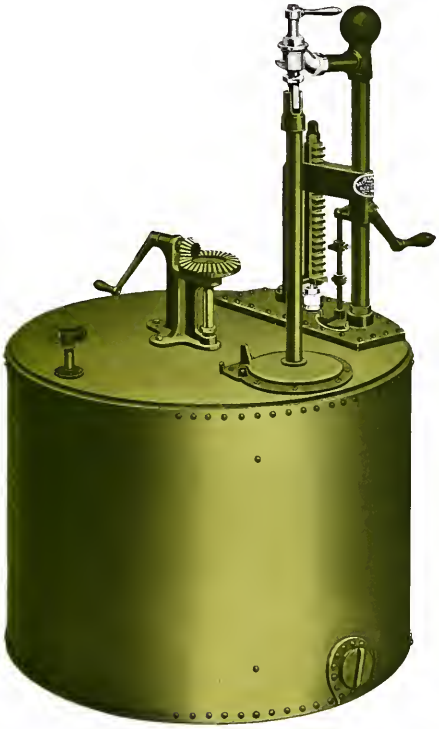
Figure 129 Outfit



STANDARD FIGURE 129 OUTFIT
WITH FIGURE 137 AGITATOR

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER

FIGURE 129 OUTFIT

The Figure 129 is a complete unit especially designed for the storing and dispensing of paints, paint oils, cutting oils and compounds, soap stocks, dipping solutions and other liquids of a like character which contain ingredients liable to precipitate or which for any other reason require agitation.

The outfit consists of a measuring pump of either quart or gallon capacity mounted upon a cylindrical tank of heavy steel construction and in which is installed an agitator for stirring the contents. A small additional charge is made when gallon pump is furnished.

Since this outfit is especially built for the storing and dispensing of those liquids which require agitation, emphasis has been placed on the principle and design of the agitator and its ability to quickly and thoroughly mix the liquid being handled. The blades of the agitator are so designed and located that the entire contents of the tank is thoroughly agitated, leaving no "dead pockets" in which sediment can collect. The lower blade fits closely to the inside of the tank. It scrapes the bottom and is placed at such an angle as to throw the liquid upward. The pump cylinder is raised sufficiently to allow this blade to travel underneath it. The upper blades of the agitator are placed so as to throw the liquid downward thus facilitating the mixing process. Three baffle plates located around the edge of the tank assist in thoroughly mixing the liquid.

The Figure 129 outfit equipped with Figure 137 hand agitator is furnished in either 1 or 2 barrel capacity and is intended for use as a single unit. Equipped with the Figure 236 power agitator however, the outfit is adaptable to battery use to meet conditions where a number of different liquids are being stored and dispensed. The outfit with Figure 236 power agitator is furnished in either 2 or 5 barrel capacity but to be placed in a battery, all outfits must be of the same capacity. As many as six outfits may be placed in one battery and driven from a single shaft. When six outfits are hooked up in this manner, the pulley is located in the center and three outfits placed on either side. A clutch arrangement provided on each outfit when placed in battery form, permits the agitators on any or all outfits to be operated or remain idle as desired.

When the liquid to be handled is of an especially heavy nature, double geared pumps are furnished at no extra cost. The need for these pumps is determined by our engineering department, and it is therefore essential, in ordering, to specify the names of liquids to be handled.

A single Figure 129 Unit or a number of them arranged in battery form, provide a most efficient, economical and convenient means of storing and dispensing liquids which require agitation. Liquids are kept in the best possible condition due to the evaporation-proof construction of the outfit and the presence of the agitator which permits mixing whenever necessary. Gumming and the accumulation of foods and fats are eliminated as are also those losses due to evaporation, leakage and spillage. The supply can be located at a conveniently situated point rather than at some out-of-the-way place thereby speeding up service or production and eliminating the time spent going to and coming from distant sources of supply.

This outfit is furnished standard with either hand or power agitator, as explained under detailed specifications, the hand agitator being used on the smaller sizes and the power agitator on the larger sizes and on those outfits in which an especially heavy liquid is to be handled.

The pump is equipped with an anti-drip shut-off nozzle which effectively stops the flow of liquid when the pumping operation ceases. Pump is sturdily constructed and will render many years of uninterrupted service.

The tank is constructed of heavy galvanized steel, carefully riveted and soldered, and is furnished in standard capacities ranging from 65 gallons to 280 gallons. Information relative to tanks of greater capacity will be furnished upon request. Each tank is fitted with cleanout opening which permits easy removal of any sediment or foreign matter.

When liquid being stored, is received in barrels, Figure 134 Portable Barrel Drainer can be provided for easily and quickly emptying contents. This device prevents loss through spillage and sloppage and failure to completely drain containers.

PUMP FEATURES

The pump is of the latest piston type design and is ruggedly constructed to give many years of constant service. Each part is carefully machined and assembled after which the pump is subjected to a severe test under pressure to detect any possible leaks or defects in material or workmanship.

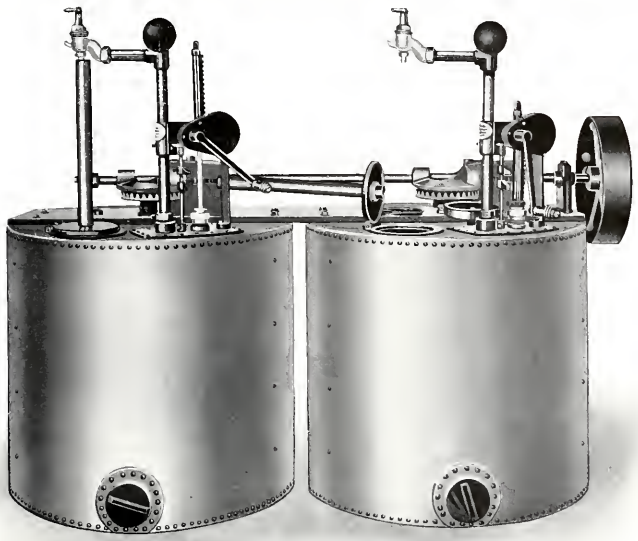
The **anti-drip shut-off nozzle** effectively stops the flow of liquid when pumping ceases. It is air-tight to prevent evaporation.

The **bracket** is of heavy gray iron construction. Its rigidity insures smooth, accurate operation of the pump.

The **cylinder** is seamless and constructed of heavy brass tubing.

The **plunger** is fitted with a specially treated leather and is held against the inner wall of the cylinder by an expanding brass spring. This prevents slippage and insures accurate measurement.

FIGURE 129 OUTFIT



BATTERY OF FIGURE 129 OUTFITS EQUIPPED WITH POWER AGITATOR FIGURE 236

The **cog rack** is of cast iron and the **driving pinion** of cold rolled steel with teeth machine cut, thus insuring a perfect fit and long life.

The **quantity stops** which control the length of the piston stroke and make possible the dispensing of quantities less than that dispensed by a full stroke of the plunger, are set for accuracy and sealed before leaving the factory. The desired quantity is obtained by simply adjusting the small lever which swings over the quantity indicator plate before operating the pump.

The **expansion chamber** at the top of the discharge pipe protects the pump against damage resulting from rise in temperature of the liquid being handled.

TANK FEATURES

The tank is cylindrical in shape and constructed of heavy galvanized steel. All seams are carefully riveted and soldered thoroughly from inside to outside. It is permanently leak- and evaporation-proof.

The **agitator** consists of three heavy blades fastened to a shaft located in an upright position in the center of the tank. The agitator is operated by means of gearing located at the top of the shaft, to which can be connected a crank handle for hand operation or a pulley for power operation. The blades are set at such an angle as to provide the most thorough agitation with least effort.

The three **baffle plates** in the tank are so placed as to assist in thoroughly mixing the liquid when the agitator is being operated.

The **cleanout opening** located near the bottom of the tank provides facilities for removing sediment or other foreign matter as required.

The **drip pan** is fitted with heavy hinged cover, plug and return tube. When pump is not being used the drip pan is effectively closed by the tip back cover and tube thus keeping out dust and dirt. A brass plug which fits into the bottom of the pan prevents evaporation. The drip tube prevents spillage when drip pan is covered.

The **screened vent** allows for inlet and outlet of air during the filling and pumping operations.

A **graduated gauge stick** of hard wood construction provides a means of determining the approximate amount of oil on hand at any time. Gauging is done through the drip pan opening.

FIGURE 129 OUTFIT

Specifications

STANDARD EQUIPMENT

The Figure 129 Outfit, for storing liquids which require agitation, consists of a galvanized steel cylindrical storage tank of from 1 to 5 barrels capacity equipped with agitator and measuring pump of either quart or gallon capacity.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Piston type measuring, up stroke, accurate measurement, easy operation, fire- and explosion-proof.

MEASUREMENT: Quart pump discharges one quart upon complete stroke of plunger and quantities of pint or half pint by first adjusting positive quantity stops. Gallon pump discharges one gallon upon a complete stroke of plunger and quantities of half-gallon, quart, or pint upon adjustment of quantity stops. All quantity stops are accurately tested and sealed before shipment.

CONSTRUCTION: Cog rack of cast iron, driving pinion of cold rolled steel with teeth machine cut, pump bracket of cast iron, cylinder of seamless brass tubing; valves suitable to liquid being handled.

NOZZLE: Anti-drip, shut-off type

AIR CHAMBER: Located at upper end of discharge pipe—provides for any expansion of liquid in the pump cylinder.

FINISH: Bronze green

DIMENSIONS: Height above tank (rack up) 21 3/4 in
Height from tank to bottom of discharge 19 1/2 in

TANK

TANK DETAILS:

CAPACITY: 65, 120 and 280 gallons

TYPE: "D" Cylindrical

CONSTRUCTION: 14 gauge galvanized steel used in 65 & 120 gallon tanks and 12 gauge in 280 gallon size, all seams riveted and soldered, leak- and evaporation proof

AGITATORS: Figure 137 hand agitator only, furnished on 65 gallon tank, either hand agitator Figure 137 or power agitator Figure 236 on 120 gallon tank, and Figure 236 power agitator only, on 280 gallon tank. Agitator blades are constructed of either galvanized or black iron according to requirements of liquid being handled. Gears are of cast iron. Power agitators on battery outfits are equipped with clutch for each tank so that any or all agitators can be operated or remain idle at will of operator. Hand agitators are so geared that two turns of crank handle make one complete revolution of the agitator blade.

BAFFLE PLATES: Three baffle plates constructed of black iron are fastened to the inside of the tank in an upright position. These facilitate agitation of the liquid.

CLEANOUT: 3 1/2 in. diameter, fitted with plug and gasket

DRIP PAN: 6 in. diameter, fitted with heavy hinged cover, plug and return tube.

VENT: Screened to prevent dirt or sparks from entering, connected to tank by 3/8 in. pipe and flange.

FINISH: Bronze green

EQUIPMENT FURNISHED AT EXTRA COST

SPECIAL OUTFITS: Hot galvanized or brass tinned agitator blades and pump parts, tin lined tanks, etc., can be furnished at extra cost when nature of liquid handled makes it necessary.

GALLON PUMP: Discharges one gallon upon complete stroke of plunger, quantities of half gallon, quart or pint may be obtained by setting positive quantity stops. This pump can be fitted with discharge register which counts complete strokes of plunger to 10 and repeats or with Figure 156-B meter which records all deliveries to 10 000 gallons and repeats. See Accessories Bulletin Figure 156-B.

BARREL DRAINER: Figure 134 Portable Barrel Drainer with chine hook and chain hoist, provides an easy process of transferring liquids from barrels. (See Accessories Bulletin Figure 134).

FIGURE 129 WITH FIGURE 137 HAND AGITATOR

TANK CAPACITY		OUTSIDE DIMENSIONS OF TANK		SHIPPING WEIGHT POUNDS—Approx.
Barrels	Gallons	Diameter in Inches	Height in Inches	14 Gauge
1	65	27	29 1/2	275
2	120	35 3/8	32	350

FIGURE 129 WITH FIGURE 236 POWER AGITATOR

TANK CAPACITY		OUTSIDE DIMENSIONS OF TANK		SHIPPING WEIGHT POUNDS—Approx.	
Barrels	Gallons	Diameter in Inches	Height in Inches	14 Gauge	12 Gauge
2	120	35	32	500	
5	280	46 1/2	41		675

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Figure 154 Outfit

STANDARD FIGURE 154 OUTFIT

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

FIGURE 154 OUTFIT

THE Figure 154 Portable Outfit is designed to meet the requirements of garages, machine shops, manufacturing plants, railroads, wholesale and retail stores and others who have occasion to distribute and dispense oils, or liquids of a similar nature, to a number of various locations.

The standard outfit consists of a 65-gallon tank of black steel construction mounted upon wheels and fitted with a measuring pump of either quart or gallon capacity. The quart pump accurately discharges one quart at each complete stroke of the plunger. Quantities of pint or half pint may be obtained by first setting the positive quantity stops. The gallon pump, furnished at additional cost, discharges one gallon upon a complete stroke of the plunger and quantities of half gallon or quart upon adjustment of the positive quantity stops. The seams of the tank are thoroughly welded, thus rendering it permanently leak- and evaporation-proof and assuring that contents will be maintained in its original state of quality.

When it is desirable to keep an accurate record of all quantities dispensed, pump can be equipped with meter which records in gallons and quarts to 10,000 gallons and automatically repeats.

This portable pump and tank outfit is especially adapted for the economic and efficient handling of oil where quantities of it are desired at various points. It is easily moved about from place to place. Through its use hundreds of containers located at widely separated points may be kept filled by one employee. Distribution to various departments is accomplished in a clean and efficient manner and in a minimum of time. Machine operators and other employees are relieved of the necessity of making frequent trips to and from distant sources of supply.

Use of this outfit eliminates losses occasioned through spillage and sloppage as the oil can be transferred from the drums to the Figure 154 outfit by means of a transfer pump and thence to the oil cans and containers by means of the measuring pump. The existence of unsightly drums and barrels fitted with spigots and the attendant fire hazard from oil-soaked floors are entirely eliminated.

PUMP FEATURES

The pump is of substantial yet simple construction and operates on the principle of positive piston type displacement. Each part of the pump is carefully machined, inspected and assembled, after which it is subjected to a liquid test under pressure to detect any possible leaks or defects in material or workmanship.

The **heavy grey iron bracket** is of rigid construction insuring smooth, accurate operation of the pump.

The **cylinder** consists of one piece of heavy seamless brass tubing—no joints to break loose and cause trouble.

The **plunger** is fitted with a formed cup leather and expanding brass spring which holds the leather tightly against the cylinder walls. This avoids the possibility of any slippage past the plunger and assures accurate measurement.

The **valves and valve seats** are ground and tested together to insure tight seating and to eliminate any leakage back through the valves.

The **cog rack and driving pinions** are of cold rolled steel with machine cut teeth. Their perfect fit insures long life, smooth operation and accurate measurement.

The **positive mechanical quantity stops** which permit the accurate dispensation of quantities less than that dispensed by a full stroke of the plunger are set for accuracy and sealed before shipment.

The **locking arrangement** consists of eyelets cast into pump bracket and crank handle through which a padlock may be inserted.

The **anti-drip nozzle** prevents any further flow of liquid after the pumping operation is completed. Nozzle tip is small enough to fit into small mouthed containers. Dripping and overflow are avoided.

TANK FEATURES

The tank is constructed of heavy galvanized steel and finished in bronze green with gold lettering. All seams are carefully and thoroughly welded, making the tank permanently leak- and evaporation-proof.

The **wheels** are of steel construction and large enough to permit easy transportation of the tank. The small guide wheel is fitted with fibre tire.

FIGURE 154 OUTFIT

The **handle bar** is of steel construction and provides a convenient means of moving the tank from place to place.

The **drip pan** is fitted with heavy hinged cover and return tube. When the pump is not being used, the drip pan is effectively closed by the tip-back cover and tube, thus keeping out dust and dirt. A brass plug which fits into the bottom of the pan prevents evaporation.

The **gauge stick** is of metal construction and graduated every five gallons. It is secured to a screw cap. The approximate quantity of liquid on hand at any one time can be readily determined by means of this gauge stick.

Specifications

STANDARD EQUIPMENT

The Standard Figure 154 Portable Outfit consists of a rectangular tank of 65 gallons capacity, mounted on wheels and equipped with a measuring pump of either quart or gallon capacity.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Piston type measuring, up stroke, easy operation, rapid discharge; accurate measurement; dust- and water-proof.

MEASUREMENT: The quart pump measures one quart at each complete stroke of the plunger; quantities of pint and half pint obtained by first adjusting the positive quantity stops. The gallon pump measures one gallon at each complete stroke of the plunger; quantities of half gallon and quart obtained by first adjusting quantity stops.

CONSTRUCTION: Cog rack and driving pinion of cold rolled steel with teeth machine cut, pump bracket of cast iron; cylinder of seamless brass tubing; valves of poppet type and of steel construction, plunger of spring and leather type.

DISCHARGE NOZZLE: Anti-drip type.

FINISH: Bronze green.

DIMENSIONS:

Height over all with rack up (quart pump and tank)	53 in
Height over all with rack up (gallon pump and tank)	65 in
Height, top of tank to bottom of nozzle tip	16 in

TANK

TANK DETAILS:

CAPACITY: 65 gallons.

TYPE: "B" rectangular

CONSTRUCTION: $\frac{3}{16}$ in. black steel with all seams carefully and thoroughly welded

WHEELS: Two 30 in. diameter spoke wheels, one 6 in. diameter cast iron guide wheel fitted with fibre tire.

DRIP PAN: $6\frac{1}{2}$ in. diameter fitted with hinged metal cover and screen. This also acts as the fill opening for the tank

HANDLE BAR: Constructed of $\frac{5}{8}$ in. steel and stationary.

GAUGE STICK: Constructed of metal with stamped graduations every five gallons; secured to screw cap

FINISH: Bronze green

DIMENSIONS:

Width across hubs	34 in
Length over all	45 in.

SHIPPING WEIGHT:

Complete Outfit (approximate)	450 lbs.

EQUIPMENT FURNISHED AT EXTRA COST

GALLON PUMP: Discharges one gallon at each complete stroke of the plunger

METER FIGURE 156-B: Records to 10,000 gallons and automatically repeats. *(For complete information see Accessories Bulletin Figure 156-B).*

PADLOCK: Bowser padlock complete with two keys.

TRANSFER PUMP FIGURE 20: Transfers oil from drums or other containers *(For complete information see Bulletin Figure 20).*

AIR PRESSURE BARREL DRAINER FIGURE 186: Transfers oil from shipping containers by air pressure *(For complete information see Bulletin Figure 186).*

DISPLAY TUBE FIGURE C-150: Displays the color and clarity of the oil being handled in the outfit *(See Accessories Bulletin Figure C-150).*

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Figure 172 Outfit

STANDARD FIGURE 172 OUTFIT

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

FIGURE 172 OUTFIT

THE Bowser Figure 172 outfit is a complete unit for storing and dispensing lubricating oils and liquids of a similar nature. It consists of a rectangular, cabinet type tank with hinged cover and containing an accurate measuring pump.

This outfit is an ideal unit for the handling of oil in barrel lots. It is especially adapted to manufacturing plants and power stations for the storing and dispensing of lubricating oils in various departments or locations. Where standard sized oil cans are used, it is possible to set the quantity stops to exactly fill these oilers without spilling. Frequent trips by skilled workmen to a central oil room are eliminated and the fact that oil is always close at hand results in machinery being more frequently lubricated.

The pump is sturdily constructed and of the well known piston type. It accurately measures one quart at each complete stroke of the plunger. Quantities of pint or half pint may be obtained by first setting the positive quantity stops.

The tank is constructed of heavy galvanized steel with all seams riveted and soldered. It is permanently leak-proof.

When not in use, the outfit may be securely locked by first closing the cabinet and then inserting a padlock through the hasp and staple lock. Any ordinary padlock may be used or if desired, we can furnish one at small additional cost.

Where it is necessary or desirable to keep an accurate record of all oil dispensed through this unit, it may be equipped, at small extra cost, with a meter which records in quarts and gallons to 10,000 gallons and automatically repeats.

This outfit is frequently used by garages, filling stations and stores for the retailing of lubricating oils. It presents a neat and orderly appearance on the sales floor and eliminates unsightliness caused by the presence of barrels, drums or other makeshift containers.

Wherever this outfit is in use, losses resulting from leaky faucets, partially drained shipping containers, absorption, spilling, over-measurement, carelessness, contamination by dirt, etc., are entirely eliminated. Every pint of oil purchased is accounted for. The ever present fire hazard wherever inflammable oils are handled is reduced to a minimum.

PUMP FEATURES

The pump is of piston type design and sturdily constructed throughout to render a long term of economical and satisfactory operation. Discharge is rapid and accurate.

Each part of the pump is carefully machined and assembled, after which the complete pump is subjected to a rigid test with liquid under pressure to detect any defects in material or workmanship.

In case of accidental damage to any part of the pump, replacement parts can be easily and quickly secured and installed.

The **positive mechanical quantity stops** which control the length of the plunger stroke and permit the delivery of pint or half-pint quantities are set for accuracy and sealed. The stops are easily set for the desired quantity by simply moving a small lever which swings over the quantity plate.

The **heavy grey iron bracket** is rigidly constructed, insuring easy, smooth, accurate operation of cog rack and pinion.

The **cylinder** is constructed of one piece of seamless brass tubing.

The **plunger** is of the spring and leather type. The formed cup leather is especially treated for the liquid to be handled. The expanding brass spring holds the leather tightly against the cylinder wall, preventing any slippage of liquid past the plunger and thus insuring that a correct quantity will be dispensed.

The **valves and valve seats** are carefully ground and tested together to insure perfect seating.

The **cog rack and driving pinion** are of cold rolled steel with machine cut teeth. Their close fit and true lift insure ease of operation, long life and accuracy in measurement.

The **anti-drip nozzle** prevents any further flow of liquid after the pumping operation is discontinued. Nozzle tip is small enough in diameter to fit into small mouthed container.

FIGURE 172 OUTFIT

TANK FEATURES

The tank is constructed of 16 gauge galvanized steel. All seams are first riveted and then soldered by an exclusive Bowser process which makes the tank permanently leak-proof. After completion the tank is subjected to a rigid test by liquid under pressure to detect and correct the slightest leak.

The **metal gauge stick** suspended through the pump plate and graduated every five gallons permits the contents of the tank to be ascertained whenever desired.

The **removable drip pan** permits the return to the tank of any spilled liquid and also provides a fill opening for replenishing the supply.

The **hinged cover** is so constructed that when closed the pump and top of tank are thoroughly protected from dust, rain, snow, etc. The outfit may be used out of doors when desirable.

The **locking arrangement** consists of staple welded to the tank over which the hasp on the cover fits when outfit is closed. A padlock inserted through the staple locks the outfit securely.

Specifications

The standard Figure 172 outfit consists of a 65-gallon rectangular, cabinet type tank with hinged cover containing a measuring pump of quart capacity.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Up stroke, piston type measuring; easy operation; rapid discharge; dust-proof.

MEASUREMENT: Measures one quart at each complete stroke of the plunger; quantities of pint or half-pint obtained by first adjusting positive quantity stops.

CONSTRUCTION: Cog rack and driving pinion, cold rolled steel, teeth machine cut; pump bracket, cast iron; cylinder, seamless brass tubing; plunger, spring and leather type; valves, material suitable to liquid to be handled

DISCHARGE NOZZLE: Anti-drip type, nickel plated.

DIMENSIONS: Height, top of tank to bottom of nozzle tip $12\frac{1}{2}$"

TANK

TANK DETAILS:

CAPACITY: 65 gallons.

TYPE: Rectangular, cabinet, with hinged cover.

CONSTRUCTION: 16-gauge galvanized steel; all seams riveted and soldered from inside to outside—permanently leak-proof.

GAUGE STICK: Metal; graduated every five gallons; inserted through pump plate.

FINISH: Bronze green with gold lettering; inside of cover finished in French grey.

DIMENSIONS:

Height (closed)	47"
Height (open)	67"
Width	21"
Depth	28"
Shipping Weight, Standard Outfit	225 lbs.

EQUIPMENT FURNISHED AT EXTRA COST

METER: Records in gallons and quarts to 10,000 gallons and repeats.

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Figure 182 Outfit

STANDARD FIGURE 182 OUTFIT

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

FIGURE 182 OUTFIT

THE Bowser Figure 182 is a complete portable outfit designed for the handling of cutting oil in machine shops, manufacturing plants and other places where cutting oil is used. The outfit consists of a 65-gallon tank mounted on wheels and fitted with a reverse suction non-measuring rotary pump.

With this equipment, new or filtered cutting oil can be transported from the storage tanks or filter to the machinery and the used cutting oil returned to the reclaiming or filtering unit. The process is accomplished easily and quickly and without any loss or mess due to improper or inadequate handling facilities.

The pump being of the reverse suction rotary type, draws the liquid into the outfit tank when the crank handle is being turned to the left and discharges liquid when the crank handle is being turned to the right. This feature permits the outfit to be used for collecting used oil and transferring it to the reclaiming unit and also for delivering new oil to the machines as needed.

When the oil in the machine reservoir becomes unfit for further use the Figure 182 wheel tank is simply rolled up to the machine and the oil drawn out by inserting the hose into the reservoir and operating the pump. The hose is fitted with a strainer which prevents the larger particles of metal chips and dirt from entering the tank.

The use of this outfit encourages more frequent changing of the cutting oil in the machine. Clean cutting oil insures a smoother cut and subsequently increases the life and efficiency of the machine tool. The time spent by machine operators in going to and coming from sources of supply is eliminated, as this detail can all be handled by one more moderately paid employee in a minimum of time and in a clean, efficient and economical manner.

To meet conditions where two kinds of cutting oil are being used, the Figure 182 outfit can be furnished when desired, at extra cost, with two compartments of 32 gallons each, and with a reverse suction rotary pump, hose, strainer, fill opening and clean-out furnished for each compartment.

PUMP FEATURES

The pump is of the reverse suction rotary type, sturdily constructed throughout to give dependable and uninterrupted service. It draws liquid into the tank upon turning the crank handle to the left and discharges while turning the handle to the right.

The **hose** is of a special metal lined construction, thoroughly flexible but kinkless.

The **strainer** at the end of the hose prevents chips from entering the tank.

A **suction strainer** attached at the extreme bottom of the suction pipe prevents any foreign matter, which may have gotten into the tank, from entering the pump.

TANK FEATURES

The tank is substantially constructed and finished in olive green with gold lettering. All seams are carefully welded, making it permanently leak-proof.

The **fill opening,** fitted with vented plug, permits quick filling of the tank from storage tank or reclaiming unit.

The **wheels** are constructed of steel and are large enough to permit easy transportation of the tank from place to place. The small guide wheel is fitted with fibre tire.

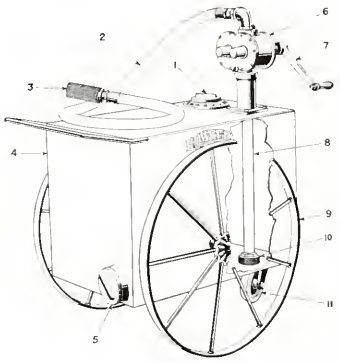
The **clean-out** enables the operator to easily remove any foreign matter from the inside of the tank. This opening is fitted with a bar plug and made tight with a gasket.

The **handle bar** provides a convenient means of moving the tank from place to place. It is stationary and of substantial construction.

FIGURE 182 OUTFIT

Key to Pump and Tank Features

1. Bar Plug for Fill Opening.
2. Hose.
3. Hose Strainer.
4. Tank.
5. Bar Plug for Clean-out Opening.
6. Reverse Suction Rotary Pump.
7. Crank Handle.
8. Suction Pipe.
9. Wheel.
10. Suction Strainer.
11. Guide Wheel.



Specifications

STANDARD EQUIPMENT

The Figure 182 Portable Wheel Tank consists of a rectangular tank of 65-gallons capacity mounted on wheels and equipped with a reverse suction rotary pump complete with hose and strainer.

PUMP

PUMP DETAILS:

CHARACTERISTICS: Reverse suction, rotary type, non-measuring, easy operating.

SIZE: 1¼ in.

HOSE: 8 ft. of 1-in. metal lined flexible kinkless hose with one male and one female coupling.

HOSE STRAINER: No. 16 mesh screen.

SUCTION STRAINER: Located at extreme lower end of suction pipe. Screen of No. 6 mesh.

TANK

TANK DETAILS:

CAPACITY: 65 gallons

TYPE: "B" Rectangular, portable

CONSTRUCTION: 3/16 in. black steel with all seams carefully welded. Permanently leak-proof.

FILL OPENING: 4 in. diameter. Fitted with bar plug and gasket.

WHEELS: Two 30 in. diameter steel wheels and one 6⅜ in. diameter guide wheel fitted with fibre tire

CLEAN-OUT: 3½ in. diameter and fitted with bar plug. Made tight by gasket

HANDLE BAR: Stationary and of steel construction.

FINISH: Olive green

DIMENSIONS:

Width across hubs	35 in.
Height over all	47 in.
Length over all	44 in.

SHIPPING WEIGHT: (Approximate) 515 lbs.

SPECIAL

TWO-COMPARTMENT TANK: Tank can be furnished with two compartments of 32 gallons each, when desired, at extra cost. Each compartment fitted with reverse suction rotary pump, hose, strainer, clean-out and fill opening

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Air-Pressure Barrel Drainer

Illustration shows standard Figure 186 Outfit, consisting of metal discharge assembly (inserted in drum) air regulating accessories with air hose and fittings, and flexible transfer hose with nozzle tip (inserted in storage tank).

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER Air-Pressure Barrel Drainer [FIGURE 186]

The Bowser Air-Pressure Barrel Drainer is especially designed to transfer oil, by air pressure, from barrels and drums to oil dispensing outfits and oil storage tanks, in a fast, clean and economical manner.

The Figure 186 consists of a sturdily constructed metal discharge assembly with 8 feet of 1-inch flexible hose and nozzle tip, and a complete assembly of air regulating accessories with 25 feet of air hose and fittings.

The discharge assembly is threaded to fit both 1 1/2 in. and 2 in. openings, and is easily adjusted for either end or side opening in the oil drum.

With this equipment it is easily possible for one man to do all the work connected with the draining and transferring of liquids from heavy, cumbersome drums to storage tanks, without any effort. Tiresome pumping or siphoning—waste of oil—spilling or splashing are entirely eliminated with the use of the Figure 186.

The Air-Pressure Barrel Drainer is especially adaptable where the Bowser Oil Fountain and other Bowser lubricating oil storage and dispensing outfits are used. It may also be used with equal facility in transferring oil from drums to any type of storage tank. When the oil storage tanks run low, simply roll in the drums, hook up the air line with the Drainer, insert the Drainer and turn on the air valve. The oil is quickly transferred without any leakage or spillage.

When not in use, the Figure 186 may be folded to require only a small space.

Specifications

STANDARD EQUIPMENT

DISCHARGE ASSEMBLY: Consists of a cast iron body and a sliding discharge tube which is attached to the 1 in. hose. The body is threaded to fit either 1 1/2 in. or 2 in. threaded end or side openings. The discharge tube can be adjusted for any height or diameter of a barrel or drum. Suitable gaskets are furnished to make a tight joint between the drainer body and the drum.

HOSE AND TIP: 8 ft. of 1 in. flexible, kinkless, metal-lined hose is furnished with hose tip. Nozzle support is also furnished to hold hose tip in place when transferring oil.

(If a longer 1 in. hose is desired it can be furnished at extra cost.)

AIR REGULATING ACCESSORIES: Consist of combination pressure reducing valve and relief valve, pressure gauge, water trap, and 25 ft. of three-ply rubber air hose complete with necessary fittings. The relief valve is set for a maximum pressure of 15 pounds.

SHIPPING WEIGHT (Approximate): 50 lbs.

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Crank-case Drainage Disposal System

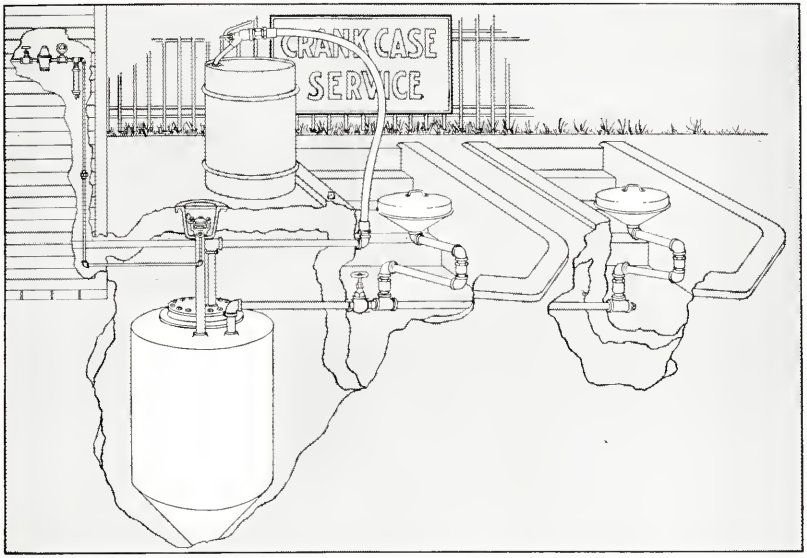


Illustration shows a representative installation of a Figure 187 Crank-case Drainage Disposal System in an Oil Pit, with an extra receiving funnel installed in an additional pit and connected to one storage tank. The extra funnel assembly is not standard. It is shown to indicate the manner in which a number of receivers can be connected to one storage tank.

Bowser Figure 187 is a complete system for receiving, storing and disposing of the used oil drained from crank-cases of automobiles, trucks, busses, etc.

The complete system consists of an adjustable receiving funnel assembly fitted with a screen and cover, a 120-gallon type "E" storage tank, a gauge stick and chart, a fill cap, a 10 ft. length of 1¼ in. hose and a Figure 189 hose nozzle.

This system is ideally suited and commonly used where an Oil Pit is installed for crank-case drainage service. It can also be used with equal facility and convenience where a rack or elevated runway are used for this service.

The swinging funnel, spotted directly under the crank-case opening, catches the dirty oil as it drains from the car—stores it safely underground, out of the way. When the storage tank is filled, air pressure supplied by the compressor used for other services, forces the dirty oil up through the hose and nozzle, into drums, ready to be carted away or disposed of otherwise, as desired. Every operation is accomplished without effort and without a trace of messiness anywhere.

The receiving funnel assembly is made up of swing joints so that it can easily be swung to the desired position under the crank-case. It is provided with a cover to prevent rain,

CRANK-CASE DRAINAGE DISPOSAL SYSTEM

FIGURE 187

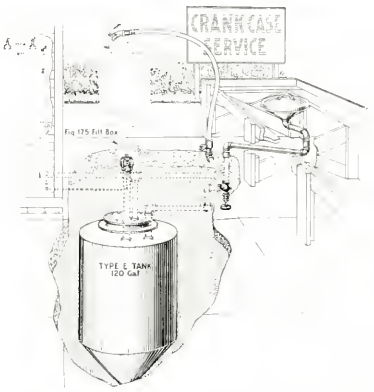
sleet, snow or other matter from clogging or obstructing the pipe lines when the system is not in use. The funnel is also equipped with No. 4 mesh screen to keep out waste, steel chips or any other foreign particles. Any number of receiving funnels can be furnished and may be connected to the one underground storage tank.

The length of hose furnished standard with the system for transferring the dirty oil from the storage tank to drums or barrels may be detached from the line at any time. The pipe line can be plugged with the plug cap furnished.

The nozzle, at the end of the hose, is the self-closing, pistol-grip type, identified by Figure No. 189. This nozzle affords easy control of the flow of oil being transferred, by air pressure, from the tank to the drum.

The standard tank is of the cone-bottom type and is substantially constructed of heavy steel with all seams welded. All inside piping and necessary fittings, such as manhole, flanges, fill cap for gauge stick and air connection are furnished standard. Larger size cone bottom tank can be furnished when desired at extra cost.

The air regulating accessories are not included in the price of the standard outfit but will be furnished at a reasonable extra cost.



Above illustration shows how the Figure 187 handles dirty oil where a rack is used for crank-case drainage purposes.

Specifications

STANDARD EQUIPMENT

The standard Figure 187 consists of a 120-gallon type "E" tank with necessary fittings, gauge stick and chart, fill cap, complete funnel assembly, globe valve, 10 ft. of 1¼ in. hose with connections, and a Figure 189 hose nozzle.

TANK:

CAPACITY 120 gallons

TYPE "E" cylindrical with deep cone bottom

CONSTRUCTION DETAILS: 12-gauge blue annealed steel shell and cone, ⅜ in. tank steel cover. All seams thoroughly welded. 16 in. manhole with bolted cover and flanges welded to tank. Diameter of tank 31 in., height 50 in.

FILL CAP: Furnished with air inlet connection and angle valve.

GAUGE STICK AND CHART: Furnished for determining contents of tank. Gauging is done through fill cap and fill pipe.

FUNNEL ASSEMBLY: Consists of 15 in. diameter funnel with No. 4 mesh screen and cover, necessary ells, nipples and swing joints, and angle valve. Entire assembly swings to any desired position.

***NOZZLE, FIGURE 189:** Self-closing, pistol-grip type.

***HOSE:** 10 ft. of 1¼ in. metal lined, flexible, kinkless, with necessary connections. Plug cap is furnished for use when hose is disconnected from discharge line.

SHIPPING WEIGHT: Complete system, 315 lbs. (approximate).

EQUIPMENT FURNISHED AT EXTRA COST

***FILL BOX, FIGURE 175:** For use with fill pipe and fill cap when tank is installed under concrete.

***AIR REGULATING ACCESSORIES:** For controlling the use of compressed air. Connect to air compressor.

(**For complete information, see Accessories Bulletins.*)

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Sentry Air Post

Air, Lights and Water

Air and Lights

Air and Water

Air Post Only

The Bowser Sentry Air Post, Figure 222, is a ruggedly built, long-range, speedy air and water serving apparatus of pleasing design.

The complete Sentry Air Post constitutes an efficient, economical and dependable air service, offers a convenient water service and the ornamental lights make it attractive to motorists, indicating plainly and invitingly that free air and water service is available.

To meet a wide variety of choice, Sentry Air Post may be furnished in four distinct models, as shown above. Its long-range service enables it to serve cars within a working diameter of 30 feet. Provides a clean, convenient service because hose and chuck are always off the ground. Heavy retrieving spring quickly returns the post to an upright position upon release of the chuck. It is easy to handle—does its work speedily and then snaps back out of the way. May be installed, when desired, at a point only a few inches distant from a building as there is no counter balancing arm to be extended from the post while it is being used. To prevent breakage, the ornamental globes are fitted with heavy guards. The entire unit is sturdily constructed for a long term of satisfactory service. See reverse side for construction details.

SENTRY AIR POST

FIGURE 222

SENTRY AIR POST SPECIFICATIONS

CONSTRUCTION: Base of cast iron, post of 3 in. black pipe extending to swivel joint and of 3_4 in. black pipe above that point, swivel base, swivel rings and lamp brackets all of cast iron.

AIR HOSE: 25 ft. of 1_4 in. rubber air hose of high grade quality.

AIR CHUCK: Small size and applicable to all types of wheels.

GLOBES: Lettered in green on white background with words "AIR" or "WATER" depending upon model of Air Post ordered.
(If water connection is furnished, the word "WATER" will be painted on one globe and "AIR" on the other.)
Globe guards, to protect glass against breakage, furnished with all globes.

WATER HOSE: 8 ft. of 1_2 in. rubber hose of good quality.

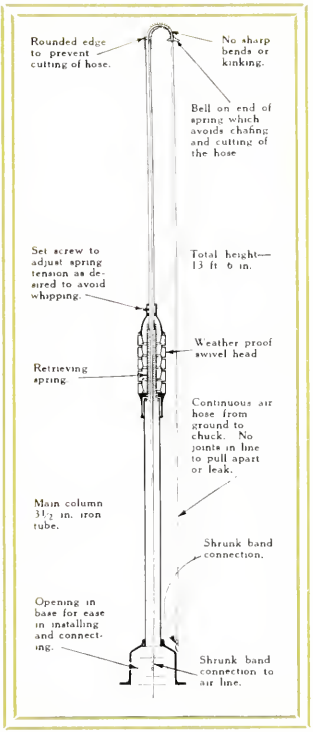
WATER FAUCET: Self-closing type.

FINISH: Base, black enamel; balance of post green enamel.

DIMENSIONS

Height over all	13 ft. 6 in.
Height of Post (from bottom of base to top of flexible joint)	6 ft. 3 in.
Diameter of base	13_4 in.
Width over all (with globes)	26 in.
Length of hose from base to chuck	25 ft.
Height of Water Connection from ground	3 ft. 6 in.
Serving radius (air)	15 ft.
Shipping weight (Air Post only) approx.	135 lbs.
Shipping weight (Air Post with lights) approx.	175 lbs.

Flexible Hose Spring — Chuck Connection



Cross-Section Outline of Sentry Air Post Showing Various Points of Superiority

Flexible Hose Spring

The bell-shaped spring eliminates all sharp bends and edges and protects the continuous air hose against kinking, cutting and chafing, regardless of the direction from which the hose may be pulled. In time the hose deteriorates but never wears out.

Chuck Connection

The metal air chuck and shrunk band connection have no protruding parts to catch or tear the top of the car. The small size of the chuck makes it applicable to all types of wheels.

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Figure 227 Floodlight

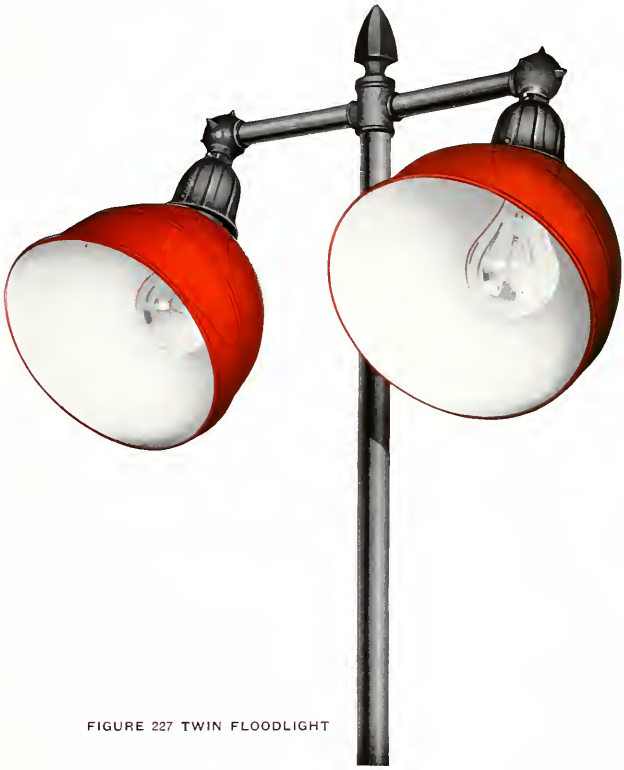


FIGURE 227 TWIN FLOODLIGHT

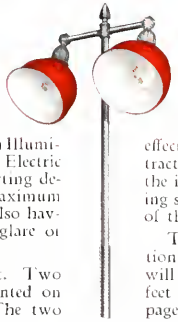
The standard Figure 227 is a Twin Floodlight furnished complete with pole, ornamental base, complete bracket and two reflectors (as shown above). When desired and specified, Figure 227 can be furnished as a Single Floodlight consisting of pole, ornamental base, one bracket arm, center fitting, ornamental cap and one reflector (see illustration on page 4). Figure 227 may be had either with or without supporting pole. Special bracket (shown on page 4) can be supplied for attaching lights to poles already installed or for mounting on flat surfaces. Bulbs are not furnished. Orders should specify exact equipment desired.

FLOODLIGHT

FIGURE 227

THE Standard Bowser Figure 227 Floodlight is a twin reflector floodlight, usually mounted on a pole, for the purpose of brightly lighting comparatively restricted areas such as gasoline service stations, swimming pools, playgrounds, and the like.

It was designed to meet the need of our modern civilization for a longer day for both business and sports.



Bowser Engineers collaborated with Illumination Engineers of the General Electric Company in producing a light projecting device capable of giving, not only maximum illumination at minimum cost, but also having permanent luminosity without glare or dazzle.

The design is scientifically correct. Two reflectors of parabolic type are mounted on one ornamental supporting pole. The two reflectors together serve to diffuse the light and eliminate glare and dazzle. Each reflector accommodates one bulb. Sockets are focused for standard 500-watt bulbs but can be adjusted to accommodate either 1000-watt or 750-watt bulbs if the condition of the installation requires more than the amount of light produced by 500-watt bulbs.

One of the outstanding characteristics of the Figure 227 Floodlight is the beautiful design—graceful and ornamental. This is *one* light projecting device that will actually add beauty—day and night. The design blends well with any style of architecture, in keeping with its surroundings, whether swimming pool, playground or gasoline service station.

The reflectors are constructed of high grade steel, finished inside and out in porcelain enamel. The inside is white—outside Bowser Red. This finish, which is a form of glass, is fused on under terrific heat—so that, barring mechanical injury, it will last indefinitely. It is never necessary to repaint or refinish. Dirt cannot penetrate the finish. The original white surface can easily and quickly be restored by simply wiping the reflectors with a damp cloth.

Atmospheric conditions, regardless of severity, do not affect the finish of the Figure 227. Due to this always-the-same and lasting finish, the Bowser Floodlight maintains the highest degree of luminosity constantly—provides just as much light six months or two years after installation as when new.

The reflectors are individually adjustable, both vertically and horizontally. Light can easily be placed just where it is wanted. The light beams can be concentrated for a very narrow lot or spread out to cover a broad one.

* * *

To floodlight a specific area of ground, it is necessary to determine the quantity of light needed, and where the brightest light should be concentrated.

It will require more light to illuminate a plot of ground on the main thoroughfare in the downtown section of a city because of the light competition from street lights, etc., than in the residential section or outlying districts where there are few or no other lights.

In order to produce the proper effect and make the lighted area stand out attractively where there is light competition, the intensity of light produced by floodlighting should be equal to four times the strength of the existing light.

The Bowser Floodlight, at normal position, equipped with two 500-watt bulbs, will illuminate a plot of ground over 180 feet by 150 feet. (See chart on opposite page.) The brightest illumination is directly in front of the standard, and up to a point 60 feet in front, 20 feet behind, and 30 feet on each side of the center line of light, the degree of illumination is of sufficient intensity for proper flood lighting effect and for ordinary outdoor working conditions.

Best results in lighting are obtained by installing two or more floodlighting units, depending on the size, shape and condition of the area to be lighted, so that light beams can be cast from opposite directions and various angles, so as to afford complete diffusion and eliminate all objectionable shadows.

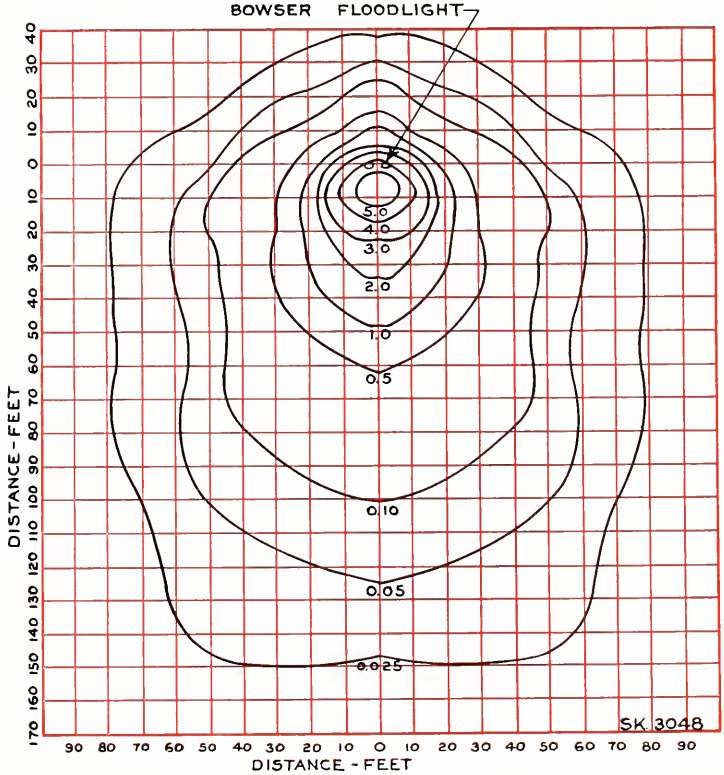
Illumination is figured on foot-candle power, that is,—the illuminating quality of a standard candle at a distance of one foot. The foot-candle power of the Bowser Floodlight burning two 500-watt lamps, shows 5.0 foot-candle power near the base of the floodlight and 0.5 foot-candle power at 60 feet, on the center line of light in front of the floodlight.

The illustration at 145 feet on the center line of light in front of the floodlight is equal to full moonlight which is the equivalent of 0.025 in foot-candles. Therefore, at 60 feet, the illumination is equal to 20 times full moonlight which is the equivalent of 0.5 in foot-candles.

By laying out the plot of ground to be illuminated, it will not be difficult to figure how many floodlights should be used and

FLOODLIGHT

FIGURE 227



where they should be placed to give satisfactory illumination. Adjustments, however, can be made after the lights are installed by raising or lowering the reflectors (vertical adjustment) or by spreading the beam of light (horizontal adjustment).

Cost of operation depends on the cost per KWH for your location. One 1000-watt bulb consumes 1 KWH per hour; one 750-watt bulb consumes three-fourths of 1 KWH per hour; and one 500-watt bulb consumes one-half of 1 KWH per hour. This, multiplied by the number of bulbs and the existing cost per KWH, will give the exact operating cost.

Scale of Light Projection by Foot-Candles

Horizontal Foot Candle Intensities on the Ground Surface

The above chart was made from an actual test of the Bowser Floodlight to determine foot candle power at various distances from the lamps.

The reflectors were mounted in standard position (with the reflector hoods hanging parallel with the pole) on a standard 25' pole, extending 22' above ground level. Two 500 watt lamps were used.

The lighting value equal to 0.5 foot candle power is available for a distance of sixty feet in front of the lamps, and for a width of sixty feet, or thirty feet in each direction from the center line of light.

The reflector sockets were focused for 500 watt lamps but can be adjusted to accommodate 750 or 1000 watt lamps. For 750 watt lamps add 50% to the foot candle power as shown on chart—for 1000 watt lamps double the foot candle power shown.

BOWSER

FLOODLIGHT

FIGURE 227

FIGURE 227
SINGLE FLOODLIGHT

Specifications

STANDARD EQUIPMENT

The standard Figure 227 is a complete Twin Floodlight Unit, consisting of pole, bracket, ornamental base and two reflectors.

CONSTRUCTION DETAILS: Pole consists of four sections, three sections built up of 2", 2½" and 3" black iron pipes, welded together, fourth section is connected to pole by 2" coupling. Bracket and base constructed of cast iron. Reflectors are constructed of deep drawing steel, formed by stamping.

BRACKET: The bracket is shipped completely assembled and consists of the bracket arms, center fittings ornamental cap, right angle swing joints, hoods, nipples and wiring—ready to connect to the service lead. The center fitting is threaded for connecting to the pole.

The ornamental cap on the center fitting is removable for making service connection. Lamp sockets focused for 500-watt lamps, but may be adjusted for either 1000 or 750-watt.

REFLECTORS: Two furnished. 18" opening at the mouth. May be cleaned by wiping out with damp cloth. Can be adjusted to any horizontal and vertical position.

POLE: Metal of pleasing design made up of four sections of pipe, varying in diameter from 3" at the base to 2" at the top. Threaded on one end for lamp bracket. Drilled and tapped for ¾" conduit connection. (Pole may be omitted if other type of mounting is desired.)

BASE: Ornamental design. Diameter, 13".

BULBS: Not furnished. Sockets focused for 500-watt P.S.-40, but may be adjusted to accommodate 1000-watt P.S.-52 or 750-watt P.S.-52 bulbs.

FINISH: Pole, Bracket and Base—black enamel. Reflectors—inside, white porcelain enamel; outside, Bowser Red porcelain enamel.

DIMENSIONS

Total length of pole	25′
Height of pole (ground line to center bracket arm)	22′
Height over all (ground line to top of ornamental cap)	23′
Width of bracket (center to center of end fittings)	30″
Width of reflector opening	18″
Shipping weight, Twin complete with pole	320 lbs approx.
Shipping weight, Single complete with pole	270 lbs approx.
Shipping weight, Twin without pole	110 lbs approx.
Shipping weight, Single without pole	75 lbs. approx.

ILLUSTRATION SHOWS METHOD OF MOUNTING LIGHTS ON POLE WITH SPECIAL BRACKET

EQUIPMENT FURNISHED AT EXTRA COST

SPECIAL BRACKET: For attaching light to a building, wood pole or iron pole already installed; complete assembly consists of bracket, piece of 2-inch pipe 8 inches long and 2-inch street elbow. When used for attaching to iron pole, two U-bolts, four swivel washers and four nuts are supplied. It may be used on any iron pole from 3 to 6 inches in diameter. When used for attaching to wood poles or flat surfaces, the necessary lag screws are not furnished as a standard part of the assembly.

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Airport Fueling System

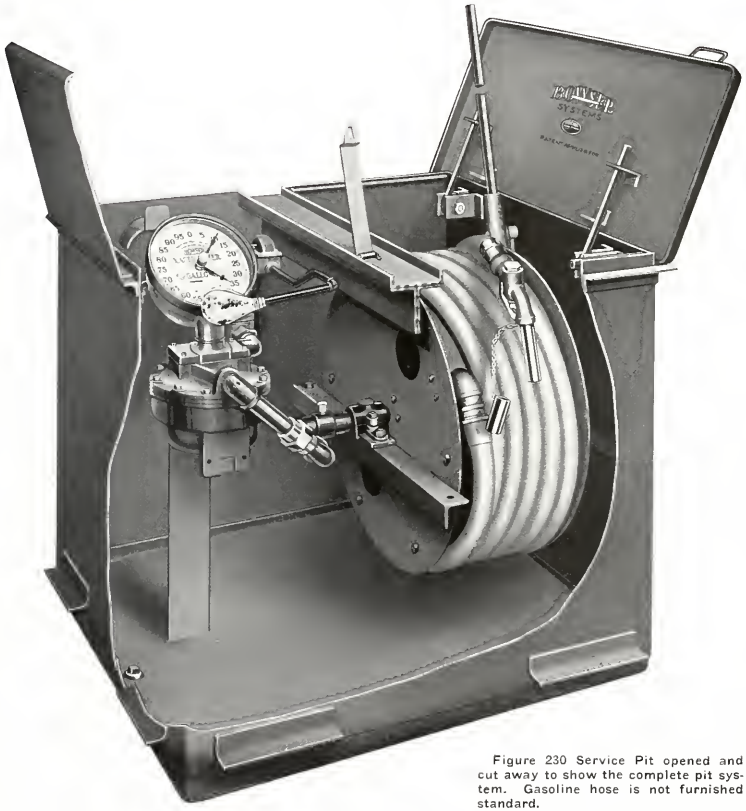

Figure 230 Service Pit opened and cut away to show the complete pit system. Gasoline hose is not furnished standard.

Note the Xacto Meter Fig. 779, with 10 in. diameter, glass-covered, 100-gallon recording, swivel dial, inclined at an angle of 45°—plainly visible at a remote distance—enabling one attendant to service planes in less time, and more accurately.

S. F. BOWSER & COMPANY, Inc.
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TORONTO LONDON BERLIN PARIS ROTTERDAM

Airport Fueling System [FIGURE 230]

THE Figure 230 is a complete fueling system, especially designed for serving gasoline, in any quantity, to aircraft on the flying field. It provides complete facilities for speedily pumping, accurately measuring and recording and easily and quickly delivering gasoline to the planes. It is furnished in two standard sizes, the smaller with 1¼ inch pumping unit and meter capable of delivering from 16 to 18 gallons per minute and the larger with 1½ inch pumping unit and meter capable of delivering from 33 to 35 gallons per minute.

The complete system consists of a heavy metal Service Pit which contains a substantial hose reel with rewinding apparatus, a hose nozzle with protective slip cap, strainer, pressure gauge, vapor-proof switch, lamp socket and shade, a Bowser Xacto Meter, equipped with 100-gallon dial inclined at an angle of 45°, all necessary inside piping ready for installation, and a compete pumping system consisting of a pump, motor, air release, relief valve, strainer, pressure gauge and a filter. On the 1½ inch system a motor starter is also included as standard equipment and the motor is connected to the pump by gearing. (See illustration on next page.)

SERVICE PIT

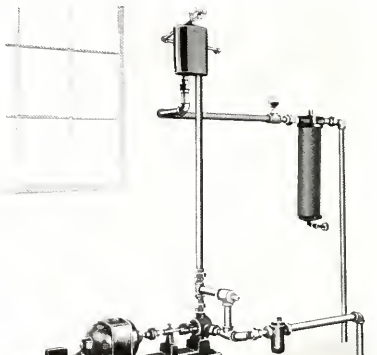
The Figure 230 Service Pit is installed in the ground with the top set a few inches above the ground level and the surrounding ground sloped up to the top of the Pit to provide drainage for surface water. When the lids are closed, the pit is watertight and is built to withstand planes taxying over it without danger. The covers are fitted with lifting handles which afford easy access to the inside of the pit. A locking hasp fits over the handles so that the entire unit can be securely locked with a padlock. Angle clips are welded to all sides for proper anchoring. Clips for a fire extinguisher are provided on the inside of the cover.

The inside of the pit and equipment installed in the pit are attractively finished in brilliant red enamel which shows immediately either from the air or ground that the pit covers are raised. Outside of pit is painted steel blue with rust resisting mineral paint.

The Pit contains a substantial hose reel for keeping the hose in good condition. The hose reel is large enough to easily accommodate 50 ft. of hose. (Hose is not furnished standard—may be supplied at extra cost). The hose rewinding lever, attached to the side of the hose reel, facilitates returning the hose to the Pit and rewinding it on the reel easily and quickly. The reel is firmly braced and supported. Babbit bearings are used and they are perfectly aligned so that the reel will run freely, smoothly and perfectly true without excessive wear on the bearings or swivel connection. The hose is drawn from, and returned to the Pit over rollers that are fitted to the sides of the Pit.

A 50 ft. serving radius, in any direction from the Pit, permits planes to come within the serving area, fill up with clean filtered gasoline, then take off to resume their flight or taxi to the line or hangar without interference from other planes that may be within the serving area.

Nozzle control of the flow of gasoline at the discharge point affords protection against spilling or overflowing—eliminating fire hazards. The nozzle is fitted with a screen of fine mesh and also with a slip cap to prevent contamination by dirt and water between serving operations.



The above illustration shows the 1¼ inch pumping unit consisting of direct connected 1¼ inch rotary pump with by-pass, ½ h. p. motor, air release, filter and strainer.

Gasoline is accurately measured by the Bowser Xacto Meter — a positive volumetric displacement meter — accurate under all rates and volumes of flow. It easily meets the tolerances established by the U. S. Bureau of Standards, the Weights and Measures Department of every State in the Union and the Department of Weights and Measures of the Dominion of Canada.

The metering unit is the Special Figure 779 Xacto Meter designed for fueling pit service. It is equipped with a large 10 in. diameter, 100-

Airport Fueling System [FIGURE 230]

gallon, glass-covered dial, mounted on a swivel and inclined at an angle of 45°, making the dial graduations and movement of hands clearly visible at a long distance. A complete and accurate record of the exact quantity of gasoline being delivered, from 1 qt. to 100 gals., is shown on the dial. One operator can handle the complete fueling operation—quicker and more accurately.

The dial hands operate clockwise and may be set back to "0" at any time. The large hand makes one complete revolution of the dial for each 5-gallons discharged—the small hand advances to the next 5-gallon graduation when the large hand has made the complete revolution. The large numerals indicate gallons in 5-gallon multiples—the small numerals indicate single gallons—outer edge graduations indicate quarts.

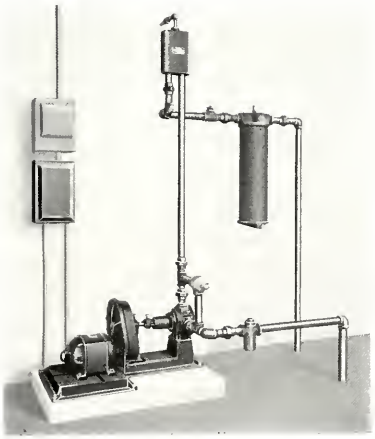
The dial is provided with an opening through which the figures of a continuous gallon counter are clearly visible. This counter maintains a continuous and accurate record of the total number of gallons dispensed. It records to 100,000 gallons and repeats.

An electric light socket and a durable metal shade are fitted inside the Pit for the purpose of illuminating the meter dial and indicating that the pumping system is in operation. The light snaps on when the pumping system is started and snaps off when the system is stopped. The dial and the totalizer are both clearly illuminated so that the figures can be easily read at any time.

The Bowser Service Pit is a complete unit with all necessary valves, piping, and equipment assembled in the Pit before shipment. It is only necessary to make pipe connections to the Pit to make the installation. The Pit may be disconnected from the line and reinstalled at another point on the field.

When it is desired to add facilities for supplying water and air, it is necessary only to pipe them to the outside of the pit and install suitable lengths of hose on the inside.

The Pit is provided with air and water connections so that these may be added with least possible inconvenience, either at time of installation or at a later date. Convenient hangers for both air and water hose are installed in Pit as standard equipment.



The above illustration shows the 1½ inch pumping unit consisting of 1½ inch rotary pump complete with by-pass and geared to 1 h. p. motor. It also includes air release, filter, strainer and motor starter.

PUMPING SYSTEM

Gasoline is supplied to the Service Pit by a complete pumping system, located in the hangar or pump house and controlled by a vapor-proof switch located in the pit.

The pumping unit furnished with the 1¼ inch Figure 230 Fueling System, consists of a 1¼ inch rotary pump direct connected with ½ h. p. motor, air release, by-pass, relief valve, strainer, pressure gauge and filter (see illustration on opposite page). It is capable of delivering from 13 to 15 gallons of gasoline in a minute. The by-pass installed on the pump is controlled by a relief valve which opens at 15 pounds pressure, allowing gasoline to circulate after discharge from hose has been stopped, and as long as pumping unit is in operation.

The air release installed in the discharge line near the pump provides for the separation and escape of any air in the liquid, thus assuring a solid flow of gasoline to the meter.

A line strainer is placed in the suction line ahead of the pump to catch any heavy dirt particles which may be in the gasoline.

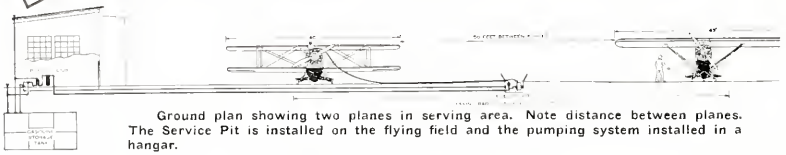
A Bowser Centrifugal Filter removes any water, moisture or dirt from the gasoline, assuring the delivery of dry, clean fuel.

The pumping unit furnished with the 1½ inch System includes a 1½ inch rotary pump geared to a 1 h. p. motor equipped with starter. It, also, is equipped with by-pass, relief valve, air release, filter, strainer and pressure gauge. The air release, filter and strainer are of 1½ inch size for use in connection with this system. This pumping unit is capable of delivering from 33 to 35 gallons per minute.

The pump furnished with both the 1¼ inch and 1½ inch systems bears the Underwriters' Label.

With both systems is included a line valve for installation in the suction line immediately above the storage tank.

Airport Fueling System [230 FIGURE]



Ground plan showing two planes in serving area. Note distance between planes. The Service Pit is installed on the flying field and the pumping system installed in a hangar.

SPECIFICATIONS
STANDARD EQUIPMENT

The Figure 230 Airport Fueling System consists of one service pit, fully equipped except for hose, for installation on the flying field and one complete pumping system for installation in the hangar or shop.

SERVICE PIT

PIT DETAILS:

CONSTRUCTION: Shell and bottom of ⅛" black iron; covers of ¼" black iron, each fitted with handles for raising and lowering, clips for fire extinguisher and hasp for locking with padlock; watertight due to flange extending around top of pit, anchoring clips prevent raising after installation; rollers fitted to two sides of pit assure easy withdrawal and return of hose to pit. Connections for air and water lines provided. Also hangers for air and water hose.

DIMENSIONS: 43" high, 47" wide, 56" long (outside).

FINISH: Outside, steel blue, rust resisting mineral paint; inside of pit and all equipment installed inside are finished in brilliant red enamel.

METER: Figure 779, size, 1¼" or 1½" depending upon size of system, dial records to 100 gallons, in multiples of quarts and gallons; hands may be set back to zero at will of operator, continuous counter records to 100,000 gallons and repeats; dial inclined at an angle of 45 degrees, 10" diameter, hands operate clockwise

HOSE REEL: Constructed of 12 gauge black iron, welded and bolted, swivel connection packed and fitted with packing gland to make it positively leak-proof (bearings and bearing caps, babbit lined and fitted with oil cups), rewinding apparatus includes ratchet arrangement fitted to reel shaft and flange of reel; removable 36" handle, accommodates 50' length of hose

NOZZLE: With 1¼" System, nozzle is of pistol type (Figure 573-A). Tip is 1¼" in diameter and 7" long. With 1½" System, a 1½" pistol type nozzle (Fig 573-A) with 1¼" x 7" tip is furnished

Both nozzles are fitted with screens and also with protective slip caps chained to nozzle.

LAMP SOCKET AND SHADE: Electric weatherproof socket with guard and shade, illuminates set back and totalizer counters; operates with pumping unit control switch

STRAINERS: Figure 730, 1¼" or 1½" depending upon size of system, cast iron body with removable screen—installed on inlet side of meter to prevent dirt particles from entering

PRESSURE GAUGE: Registers pressure up to 60 lbs; installed on strainer in pit, indicates pressure on lines at pit

CONTROL SWITCH: Vapor proof, rocker type; for controlling pumping system and light

VALVES AND PIPING: All necessary valves and piping inside pit furnished and completely installed

PUMPING SYSTEM

PUMPING UNIT:

PUMPS: With 1¼" System is furnished a 1¼" Figure 1709 rotary pump direct connected to ½ h.p. motor; capable of delivering from 16 to 18 gallons of gasoline per minute. With 1½" System a 1½" Figure 1709 rotary pump is furnished, geared to 1 h.p. motor, capable of delivering from 33 to 35 gallons per minute. Pump and motor in each case are substantially mounted upon heavy cast iron base

MOTOR: Vapor proof, 110-220 volts, single phase, 60 cycle, may be connected to 2 or 3 phase 60 cycle alternating current. All orders must specify current, voltage, phase and cycles. (A small additional charge is made for motors for current other than those given above).

STARTER: Cutler-Hammer Starter to protect motor against overloading when motor is started, furnished to suit current specifications. (Furnished with 1½" System only).

BY-PASS: Installed on pump, by-passes gasoline back to tank when pump is operating and nozzle at end of hose closed; controlled by relief valve set at 15 lbs.

PRESSURE GAUGE: Installed in discharge line from pump, indicates pressure on lines, records to 60 lbs.

***AIR RELEASE:** Figure 773, 1¼" or 1½" inlet and outlet openings, depending upon size of system, separates and releases air from liquid passing through line.

FILTER: Figure 255-A with 1¼" openings furnished with 1¼" system; length over all 30", diameter 6". Figure 255 with 2" openings bushed to 1½", furnished with 1½" system, length over all 34", diameter 8", positively separates all water from gasoline.

***STRAINER:** Figure 730, 1¼" or 1½" size depending upon size of system, cast iron body with removable screen; for installation in suction line, ahead of pump

LINE VALVE: 2" openings; for installation in suction line to pump, above top of tank.

SHIPPING WEIGHT:

1¼" System complete	1470 lbs.
1½" System complete	1750 lbs

EQUIPMENT FURNISHED AT EXTRA COST

ADDITIONAL SERVICE PITS: One or two additional service pits for connection to same pumping unit

TANK AND FITTINGS: Cylindrical storage tank of any capacity up to 25,000 gallons complete with all necessary flanges, suction and fill pipe

GASOLINE HOSE: 50' of 1¼" or 1½" metal lined rubber covered airport hose fitted with male pipe couplings

AIR HOSE: 50' of ¼" rubber covered air hose; complete with connections for installing inside pit

* (For complete information on these items, see individual Bulletins)

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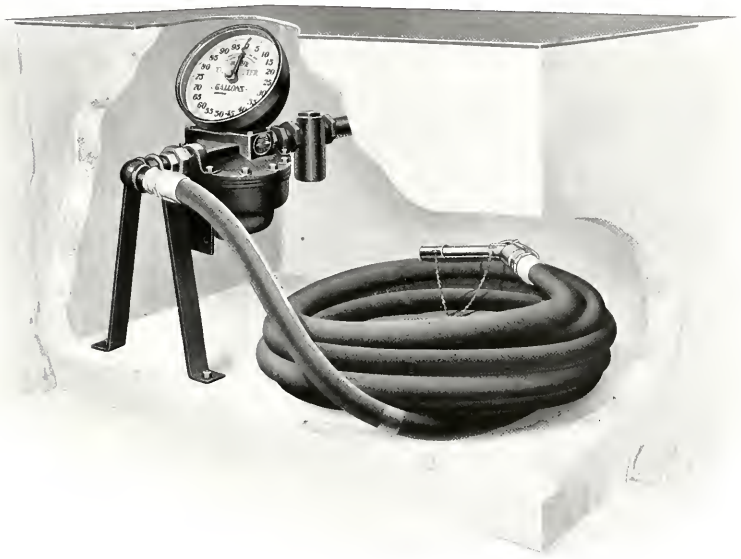
BOWSER
DEPARTMENT OF PRINTING

Airport Fueling System



Representative installation of Figure 232 Serving Equipment, consisting of Xacto Meter, Strainer and Nozzle. Gasoline hose is not furnished standard.

Note the Xacto Meter, Figure 779, with 10 inch diameter, glass-covered, 100-gallon recording dial, inclined at an angle of 45°—plainly visible at a remote distance—enabling one attendant to service planes in less time, and more accurately.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER Airport Fueling System [FIGURE 232]

THE Bowser Airport Fueling System, Figure 232, is an inexpensive, compact, practical fueling system for serving gasoline to aircraft at airports or landing fields. This system provides for pumping, measuring, recording and delivering gasoline to the planes. It is furnished in two standard sizes, the smaller with $1\frac{1}{4}$ inch pumping unit and meter capable of delivering from 16 to 18 gallons per minute and the larger with $1\frac{1}{2}$ inch pumping unit and meter capable of delivering from 33 to 35 gallons per minute.

This Fueling System is suitable for use at small airports and landing fields where the fueling requirements do not warrant the investment for the more complete and convenient facilities provided in the Figure 230 Bowser Airport Fueling System.

The System is simple; it will serve gasoline speedily; it is efficient and economical in operation; it provides positive, accurate gasoline delivery without loss or spillage, it maintains a constant check on all gasoline handled.

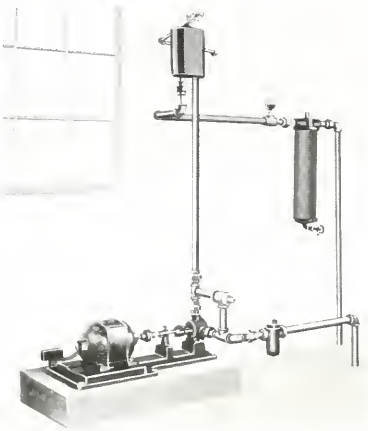
The equipment furnished standard is a complete pumping unit consisting of pump, motor, air release, strainer, relief valve, pressure gauge and filter—and serving equipment consisting of a Bowser Xacto Meter, equipped with 100-gallon dial inclined at an angle of 45 degrees, strainer and hose nozzle fitted with protective slip cap. On the $1\frac{1}{2}$ in. system a motor starter is also included as standard equipment with the pumping unit and the motor is connected to the pump by gearing. (See illustration on next page—pumping unit for $1\frac{1}{4}$ in. system is shown on this page.) Gasoline hose is not furnished standard—may be supplied at extra cost.

The serving equipment is intended for installation in a pit (pit furnished by purchaser) set flush with the ground level, at a point of convenient service on the field. In this way the serving equipment offers no ground hazard, and when 50 feet of delivery hose is used, planes can be served within a radius of 50 feet in any direction.

Planes can approach within the serving radius of the fueling pit, fill up with clean filtered gasoline—in any quantity—and then proceed on their flight or taxi to the hangar or line without interference of any kind.

All gasoline is passed through an efficient filtering unit which removes dirt and moisture before it is dispensed to the plane.

Nozzle control of the flow of gasoline at the discharge point affords protection against spilling or overflowing—eliminating fire hazards. The nozzle is fitted with a screen of fine mesh. A slip cap is furnished for the nozzle tip to prevent contamination by dirt and water between serving operations.



The above illustration shows the $1\frac{1}{4}$ inch pumping unit consisting of direct connected $1\frac{1}{4}$ inch rotary pump with by-pass, $\frac{1}{2}$ h. p. motor, air release, filter and strainer.

Gasoline is accurately measured by the Bowser Xacto Meter—a positive volumetric displacement meter—accurate under all rates and volumes of flow. It easily meets the tolerances established by the U. S. Bureau of Standards, the Weights and Measures department of every State in the Union and the Department of Weights and Measures of the Dominion of Canada.

The metering unit is the Special Figure 779 Xacto Meter designed for fueling pit service. It is equipped with a large 10 in. diameter, 100-gallon, glass-covered dial, inclined at an angle

Airport Fueling System [FIGURE 232]

of 45 degrees, making the dial graduations and movement of the hands clearly visible at a long distance. A complete and accurate record of the exact quantity of gasoline being delivered, from 1 quart to 100 gallons, is shown on the dial. One operator can handle the complete fueling operation—quicker, better and more accurately.

The dial hands operate clockwise and may be set back to "0" at any time. The large hand makes one complete revolution of the dial for each 5-gallons discharged—the small hand advances to the next 5-gallon graduation when the large hand has made the complete revolution. The large numerals indicate gallons in 5-gallon multiples—the small numerals indicate single gallons—outer edge graduations indicate quarts.

The dial is provided with an opening through which the figures of a continuous gallon counter are clearly visible. This counter maintains a continuous and accurate record of the total number of gallons dispensed. It records to 100,000 gallons and repeats.

A complete and compact pumping system, located in a corner of the hangar or repair shop, provides speedy and efficient delivery of gasoline to the serving equipment on the field.

The cost of maintenance is small—depreciation is negligible.

For complete information on the larger Bowser Airport Fueling Systems, see Figure 230 Bulletin.

PUMPING SYSTEM

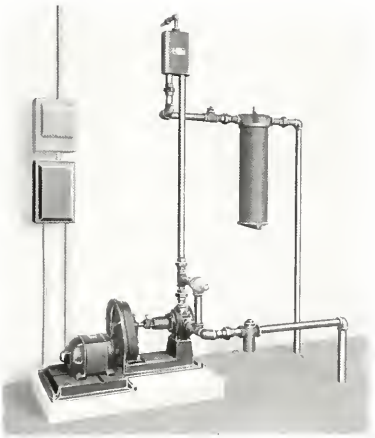
Gasoline is supplied to the Serving Equipment by a complete pumping system, located in the hangar or pump house and controlled by a vapor-proof switch located in the pit.

The pumping unit furnished with the $1\frac{1}{4}$ in. Figure 232 Fueling System, consists of a $1\frac{1}{4}$ in. rotary pump direct connected with $\frac{1}{2}$ h.p. motor, air release, by-pass, relief valve, strainer, pressure gauge and filter (see illustration on opposite page). It is capable of delivering from 16 to 18 gallons of gasoline in a minute. The by-pass installed on the pump is controlled by a relief valve which opens at 15 pounds pressure, allowing gasoline to circulate after discharge from hose has been stopped, and as long as pumping unit is in operation.

The air release installed in the discharge line near the pump provides for the separation and escape of any air in the liquid, thus assuring a solid flow of gasoline to the meter.

A line strainer is placed in the suction line ahead of the pump to catch any heavy dirt particles which may be in the gasoline.

A Bowser Centrifugal Filter removes any water, moisture or dirt from the gasoline, assuring the delivery of dry, clean fuel.



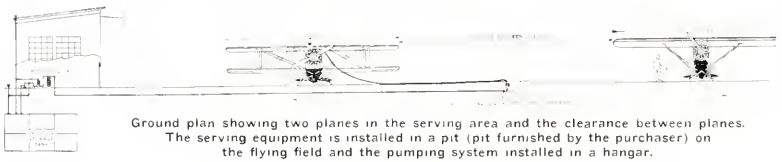
The above illustration shows the $1\frac{1}{2}$ inch pumping unit consisting of $1\frac{1}{2}$ inch rotary pump complete with by-pass and geared to 1 h. p. motor. It also includes air release, filter, strainer and motor starter.

The pumping unit furnished with the $1\frac{1}{2}$ in. System includes a $1\frac{1}{2}$ in. rotary pump geared to a 1 h.p. motor equipped with starter. It, also, is equipped with by-pass, relief valve, air release, filter, strainer and pressure gauge. The air release, filter and strainer are of $1\frac{1}{2}$ in. size for use in connection with this system. This pumping unit is capable of delivering from 33 to 35 gallons per minute.

The pump furnished with both the $1\frac{1}{4}$ in. and $1\frac{1}{2}$ in. systems bears the Underwriters' Label.

With both systems is included a line valve for installation in the suction line immediately above the storage tank.

Airport Fueling System [FIGURE 232]



Ground plan showing two planes in the serving area and the clearance between planes. The serving equipment is installed in a pit (pit furnished by the purchaser) on the flying field and the pumping system installed in a hangar.

SPECIFICATIONS

STANDARD EQUIPMENT

The Figure 232 Airport Fueling System consists of serving equipment, fully equipped except for hose, for installation on the flying field and one complete pumping system for installation in the hangar or shop.

SERVING EQUIPMENT

METER: Figure 779; size 1¼" or 1½" depending upon size of system; dial records to 100 gallons, in multiples of quarts and gallons, hands may be set back to zero at will of operator; continuous counter records to 100,000 gallons and repeats; dial inclined at an angle of 45 degrees, 10" diameter; hands operate clockwise.

NOZZLE: With 1¼" System, nozzle is of pistol type (Figure 197). Tip is 1⅛" in diameter and 7" long. With 1½" System, a 1½" pistol type nozzle (Fig. 197), with 1½" x 7" tip is furnished.

Both nozzles are fitted with screens and also with protective slip caps chained to nozzle.

STRAINER: Figure 730, 1¼" or 1½" depending upon size of system; cast iron body with removable screen—installed on inlet side of meter to prevent dirt particles from entering

PUMPING SYSTEM

PUMPING UNIT:

PUMPS With 1¼" System is furnished a 1¼" Figure 1709 rotary pump direct connected to ½ h.p. motor, capable of delivering from 16 to 18 gallons of gasoline per minute. With 1½" System a 1½" Figure 1709 rotary pump is furnished, geared to 1 h.p. motor; capable of delivering from 33 to 35 gallons per minute. Pump and motor in each case are substantially mounted upon heavy cast iron base.

MOTOR: Vapor proof, 110-220 volts, single phase, 60 cycle; may be connected to 2 or 3 phase 60 cycle alternating current. All orders must specify current, voltage, phase and cycles. (A small additional charge is made for motors for current other than those given above.)

STARTER: Cutler-Hammer Starter to protect motor against overloading when motor is started; furnished to suit current specifications (Furnished with 1½" System only).

BY-PASS: Installed on pump; by-passes gasoline back to tank when pump is operating and nozzle, at end of hose, closed; controlled by relief valve set at 15 lbs.

PRESSURE GAUGE: Installed in discharge line from pump; indicates pressure on lines; records to 60 lbs.

***AIR RELEASE:** Figure 773, 1¼" or 1½" inlet and outlet openings, depending upon size of system, separates and releases air from liquid passing through line.

***FILTER:** Figure 255-A with 1¼" openings furnished with 1¼" system; length over all 30", diameter 6"; Figure 255 with 2" openings bushed to 1½", furnished with 1½" system, length over all 34", diameter 8"; positively separates all water from gasoline.

STRAINER: Figure 757, 1¼" or 1½" size depending upon size of system; cast iron body with removable screen, for installation in suction line, ahead of pump.

LINE VALVE: 2" openings, for installation in suction line to pump, above top of tank.

SHIPPING WEIGHT:

1¼" System complete	400 lbs.
1½" System complete	650 lbs.

EQUIPMENT FURNISHED AT EXTRA COST

ADDITIONAL SERVING EQUIPMENT: One or two additional serving units for connection to same pumping unit.

TANK AND FITTINGS: Cylindrical storage tank of any capacity up to 25,000 gallons complete with all necessary flanges, suction and fill pipe

GASOLINE HOSE: 50 ft. of 1¼" or 1½" special gasoline hose, depending upon size of system.

*(For complete information on these items, see individual Bulletins)

BOWSER
ESTABLISHED 1885

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Airport Fueling System

(HAND-OPERATED)

TO meet a special need for modern aircraft fueling facilities at airports and landing fields located in remote sections of the country where electrical current, necessary for power operation, is not available, Bowser has designed the Figure 235 hand-operated fueling system.

This special system, equipped for pumping, measuring, recording and delivering gasoline to aircraft, is built in the 1¼ inch size only, capable of delivering from 15 to 18 gallons per minute. It is very simple, compact and inexpensive and while it obviously does not provide the speed, convenience and efficiency of the more complete, power-operated Bowser Fueling Systems, Figures 230 and 232, it is ideally suited for use and meets aircraft fueling needs exactly in locations where power facilities are not available.

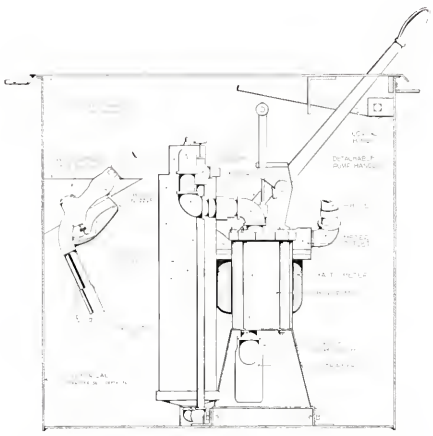

Diagram shows arrangement of equipment inside pit and indicates passage of gasoline through the system, viz: through strainer, pump, filter, meter, hose and nozzle.

The Figure 235 system is complete in itself (except for hose)—all equipment necessary for operation is compactly mounted inside a cylindrical service pit (see diagram). The equipment furnished standard includes a hand-operated pump, strainer, centrifugal filter, hose nozzle with protective slip cap, Bowser Xacto Meter and all necessary inside piping enclosed and substantially supported inside a steel pit, ready for installation. Gasoline hose is not furnished standard, but will be supplied at extra cost when desired.

The complete system is installed in the ground with the top set a few inches above the grade level, at a point of convenient service on the flying field. When the lid is closed, the pit is water-tight and is built to withstand planes taxying over it without danger. In this way the system offers no ground hazard, and when 50 feet of hose is used, planes can be served within a radius of 50 feet in any direction. Planes can approach within the serving radius of the pit, fill up with clean, water-free, filtered gasoline—in any quantity—then proceed without interference or danger of any kind.

Gasoline is supplied by a hand-operated, continuous-flow, piston-type pump which discharges gasoline on both strokes of the handle at a rate of 15 to 18 G.P.M., depending upon

Airport Fueling System [FIGURE 235]

the speed of the handle movement. Ample standing room for the attendant has been provided in the pit to facilitate movement of the easy operating (detachable) pump handle. From the pumping position the operator can easily observe the meter reading which shows when the exact desired quantity has been delivered.

Every gasoline movement is accurately measured and recorded by the Bowser Xacto Meter—a positive volumetric displacement meter which is accurate under all conditions of service. Xacto meets the tolerances established by the U. S. Bureau of Standards, the Weights and Measures Department of every state in the Union and the Department of Weights and Measures of the Dominion of Canada.

Xacto Meter, Figure 764, keeps an exact check on each individual delivery and a complete record of the total number of gallons dispensed. It is equipped with a continuous counter which records in gallons to 100,000 and repeats. This counter is fitted with a cover which may be locked so that readings are available only to those holding keys. It is also equipped with a set-back counter with 1-10 gallon wheel, which records to 1,000 gallons and repeats. This latter counter facilitates the exact checking of individual deliveries and may be set back to 0 at any time.

All gasoline is passed through an efficient centrifugal filter which removes any water, moisture or dirt from the gasoline, insuring the delivery of dry, clean, safe fuel.

A line strainer is placed in the suction line on the inlet side of the pump to catch any heavy dirt particles which may be in the gasoline.

Nozzle control of the continuous flow of gasoline at the point of discharge affords protection against spilling or overflowing—eliminating hazards of fire. The nozzle is fitted with a screen of fine mesh and slip cap to prevent any possibility of contamination by dirt or water.

The service pit is 36" in diameter by 36" in depth and is sturdily built of heavy black steel. It is provided with a heavy hinged cover fitted with lifting handles which afford easy access to inside of pit. A locking hasp is also attached to cover so that the entire system may be securely locked. Hose supports are welded to inside of pit to accommodate coiling of hose inside pit around pump, meter, filter, etc., permitting easy and convenient handling of hose.

Specifications

STANDARD EQUIPMENT

***METER:** Figure 764. $1\frac{1}{4}$" size. Maximum capacity, 20 G.P.M. Elbow furnished at outlet for attaching hose.

***PUMPING UNIT:** Figure 719. $1\frac{1}{4}$" size. Maximum capacity, 18 G.P.M. Hand-operated type. Double acting lever handle. Oscillating handle motion. Handle detachable. Height overall, including handle, 48".

***FILTER:** Figure 255-A. $1\frac{1}{4}$" size. Fitted with top water draw off. Installed between pump and meter.

***STRAINER:** Figure 757. $1\frac{1}{4}$" size. Installed at inlet to pump.

***NOZZLE:** Figure 573-A. $1\frac{1}{4}$" size. Pistol grip, wet-hose type.

SERVICE PIT: 36" diameter, 36" depth. Shell, 10 gauge; bottom, $\frac{1}{4}$", cover, $\frac{1}{16}$" all black steel. Pumping and serving equipment assembled into one compact unit and securely bolted to bottom of pit.

SHIPPING WEIGHT: Complete system, approximate, 650 lbs.

EQUIPMENT FURNISHED AT EXTRA COST

GASOLINE HOSE: 50' of $1\frac{1}{4}$" special metal-lined rubber covered gasoline hose.

TANK AND FITTINGS: Cylindrical storage tank of any capacity up to 25,000 gallons complete with all necessary flanges, suction and fill pipe.

For complete information on items marked (*) see individual bulletins.

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Portable Carriages

For Xacto Barrel and Can Filling Measuring Units

The Figures 281 and 282 Portable Carriages are designed for carrying any one of the Xacto Barrel and Can Filling Measuring Units (except the Fig. 766 which is designed for stationary installation) so that *one* measuring unit may be used to handle several grades of similar liquids.

The carriage is fitted with castors and built so that it may be easily moved from one point to another in a plant and connected to different outlets. In this way it is possible for a plant whose production does not require a separate measuring unit for each grade of liquid packaged to use one Xacto Unit to satisfactorily handle several grades of liquids which are similar in color and other characteristics.

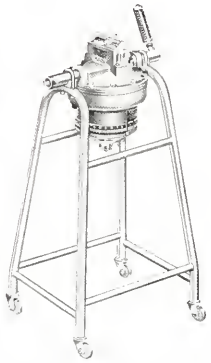


Figure 281 Portable Carriage with Figure 764-T Xacto Measuring Unit Mounted on It. Clip board, 1½" x 42" hose and gate valve furnished standard are not shown.

The Figure 281 consists of the portable carriage equipped with a thermometer, clip board and furnished with a 42" length of 1½" hose with quick opening gate valve located on the inlet end of hose and a 1½" quick hose coupling provided on the inlet to the valve. Additional tail pieces for the quick coupler can be supplied at extra cost when desired and specified.

The Figure 282 (see reverse side) consists of the same equipment as the Figure 281 and in addition includes a pump, motor (mounted on a suitable base) and a 50' length of rubber covered extension cord directly connected to the motor and fitted with a male plug on the opposite end.

The Figure 282 price, however, does not include the pump and motor for the reason that it is impracticable to standardize on one particular type and size of pumping unit capable of satisfactorily

Portable Carriages

For Xacto Barrel and Can Filling Measuring Units

handling all requirements. When ordering the Figure 282, it is necessary to furnish us the following information: complete report of conditions under which the pump is to operate; S. A. E. number of oil to be handled; temperature of oil; maximum limits, etc. This information will enable us to determine the exact type and size of pump and motor required to meet the conditions and insure satisfactory operation and service.

The carriage is constructed of pipe, well braced, and all joints are welded to make it rigid. Its design is such that it is difficult to upset it. It is fitted with 2 1/2" diameter wheels. Lugs are used to securely bolt the measuring unit in place.

SPECIFICATIONS

FINISH. Carriage and accessories (except thermometer and gate valve) are finished in bright green.

DIMENSIONS. Height, 40 1/2", width, 25" overall.

SHIPPING WEIGHT. (without pumping unit) Approximately 39 pounds.

EQUIPMENT FURNISHED AT EXTRA COST

CAN PLATFORM. For setting of cans. Attaches to carriage in proper position for filling cans.

NOTE: Float control nozzles are not furnished by Bowser. Customer may easily secure direct from manufacturers.

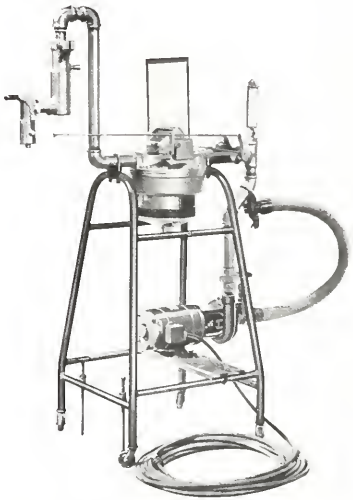
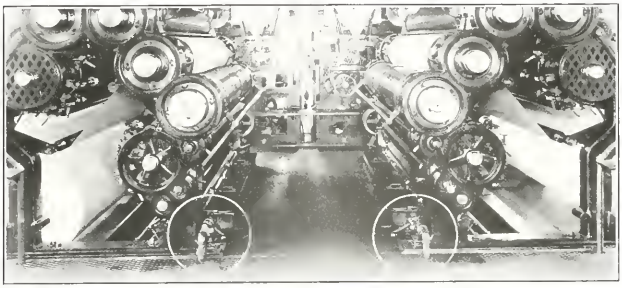
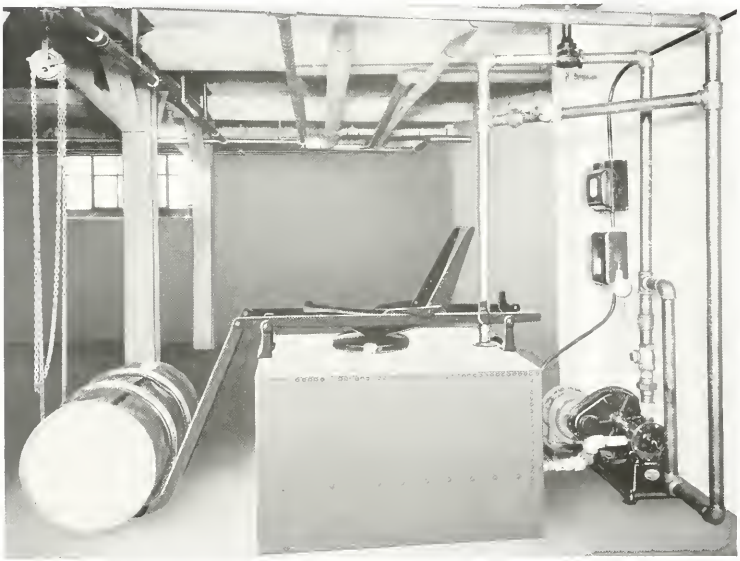


Figure 282 Portable Carriage with a Special Fig. 790 Xacto Can Filling Unit (with temperature control) mounted on it. The two screw bolts, at bottom left of carriage, for holding the carriage stationary, are not standard on the Fig. 282 but furnished at slight additional cost. When shipped, the Fig. 282 is equipped with pump, motor and extension cord assembled and mounted as shown above, except the gate valve is located on the inlet end of the 1 1/2" hose instead of at the inlet of the pump, as shown.

BOWSER

Figure 290 News Ink Systems





Typical installation of a Bowser Figure 290 News Ink Storage and Distributing System supplying ink to a newspaper press. Circled portions of upper photo show the weighted handle gate valves which control the flow of ink to the founts on the press. Lower view shows the pumping unit, storage tank, and the method of emptying shipping containers. Clean, economical, efficient and very convenient.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

News Ink Systems [FIGURE 290]

BOWSER Figure 290 News Ink Systems are designed for the handling, storing and distribution of black news ink used in newspaper printing presses. They are applicable to presses having either a direct feed pressure inking system or to those presses equipped with ink founts in which the ink rolls rotate. These systems are furnished in various sizes and capacities, according to the number of founts to be served, to adequately meet the needs of the largest as well as the smallest press requirements.

Figure 290 systems are complete with all necessary equipment and accessories (except motors and starters) for handling and emptying shipping containers, storing the ink, and distributing it to the press.

With this type of equipment installed, the contents of heavy shipping containers are easily, quickly and completely drained into the storage tank and the containers are then immediately carted away to save space. One man does the work easily without spilling or slopping.

The ink is stored in a heavy rectangular steel tank of leak-proof construction. The surroundings are always clean and tidy—there can be no mess due to leakage or seepage. The ink is kept clean and uniform.

A power pump, furnished standard with the system, efficiently conveys the ink from the storage tank directly to the points of use on the press. Engaging an electric switch starts the pumping unit and places the entire system in operation ready for use. Two power pumps are recommended for use with the systems—one for constant service, the other held in reserve for emergency purposes to prevent any possibility of interruption in the press run.

Weighted handle gate valves are furnished to control the flow of ink at the point of discharge when supplying ink to presses equipped with ink founts. On presses equipped with a direct feed pressure inking system, where the ink is fed, under pressure, directly to the ink rolls, the ink is piped and conveyed to the pressure founts through a series of outlets in a main discharge header. With the latter type of installation, the weighted handle gate valves are not required. When all the valves in the system are closed, the ink is by-passed back to the storage tank until the pumping unit is shut off.

Any desired quantity may be withdrawn in a very short time directly from the main storage tank to the points of use. The entire operation is very simple and practically automatic, affording unusual convenience and effecting a great savings of time, labor, and expense. Cans, buckets, and paddles are no longer needed.

Figure 290 puts the storage and distribution of ink on a highly efficient and economical basis. The operating and upkeep expense is negligible. Every unit and part of the system is substantially built to render dependable and uninterrupted service.

SYSTEM FEATURES

The motor-driven rotary pump (motor not furnished) equipped with reduction gears and furnished standard with each system, is especially constructed for ink handling service. Pump size, G.P.M., etc., are given in the table under "General Specifications" on page 4. Further details and specifications are given in the Figure 1709 Bulletin.

The tank furnished standard with each system is of a capacity large enough to hold, approximately, a 36-hour press-run supply of ink. These tanks are made of 3-16" and ¼" black tank steel. All seams and joints are carefully riveted and welded to insure many years of leak-proof storage. The 585, 1225 and 1700 gallon tanks are furnished with the following openings: One 15" manhole for filling and cleaning; one 3½" bar plug clean-out; one 3" fill flange; two 2" flanges for suction and return pipes. The 2000, 2600, 2970, 4035, and

News Ink Systems

FIGURE 290

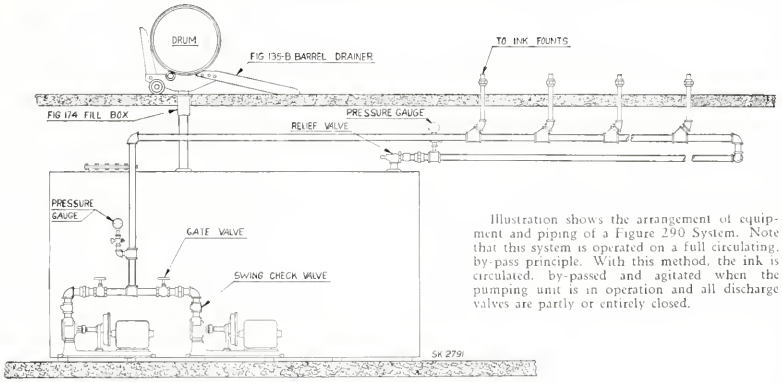


Illustration shows the arrangement of equipment and piping of a Figure 290 System. Note that this system is operated on a full circulating, by-pass principle. With this method, the ink is circulated, by-passed and agitated when the pumping unit is in operation and all discharge valves are partly or entirely closed.

4550 gallon tanks are fitted with the following openings: one 15" manhole; one 8"x10" clean-out; one 3" fill flange; and two 2" flanges for suction and return pipes.

The above tanks are of the absolute minimum capacity which we recommend for use with each system. These tank capacities are figured on an ink consumption basis of 4 gallons per hour per fount—16 gallons per hour on a 4-fount system, etc. Wherever space will permit, the tank capacity for each system should be doubled—preferably using two tanks of the same size. This obviously eliminates the necessity of frequent filling and permits cleaning the tanks when necessary without interfering with the operation of the system.

Tanks of sizes other than standard can be furnished when necessary to meet certain individual installation needs. Prices on application.

The relief valve serves to hold the lines full of ink, and when the pump is in operation, it maintains sufficient pressure on the lines to deliver the ink to the founts readily and rapidly. At the same time it is so set that it by-passes the ink back into the tank when the pressure for which it has been set is exceeded, thus giving complete circulation and providing the agitation necessary to keep the entire supply of ink at the proper consistency for use.

The pressure gauge, furnished for installation in the discharge line ahead of the relief valve, indicates at a glance the amount of pressure in the lines.

A Figure 201 storage indicator with the indicator board fastened on the outside of the tank is furnished standard to show the approximate quantity of ink in the tank. Figure 202-A indicator, with the point of indication installed at any remote location, may be furnished at extra cost. A gauge stick with chart can be furnished when desired for use with the 585, 1225, and 1700 gallon tanks.

A weighted handle gate valve, size $1\frac{1}{4}$", is furnished for each discharge point when the system is used in connection with presses equipped with founts. Raising the handle opens the valve and allows the ink to flow quickly and freely—releasing it closes the valve and stops the flow instantly.

There are two methods of emptying the shipping containers. On the smaller systems (tank capacities 585 to 1,700 gallons) the drums are raised to the level of the top of the tank, rolled along the barrel track onto a barrel dash, and there allowed to drain (see illustration on cover). On the larger systems (tank capacities 2,000 to 4,550 gallons) the drums are emptied into the storage tank by means of a portable barrel drainer and a fill box placed in and set flush with the press room floor (see illustration at top of page).

The equipment furnished standard with each of the Figure 290 systems is shown in the chart on page 4.

News Ink Systems

FIGURE 290

Specifications

TANK

CAPACITIES: 585, 1225, 1700, 2000, 2600, 2970, 4035 and 4550 gallons.

TYPE: "B" Rectangular.

CONSTRUCTION DETAILS: Rivet-weld construction. All seams and joints riveted and welded. $\frac{3}{16}$" black tank steel on tanks up to and including 2970 gallons $\frac{1}{4}$" black tank steel on 4035 and 4550 gallon tanks.

OPENINGS: One 15" manhole, one $3\frac{1}{2}$" bar plug clean-out, one 3" fill flange and two 2" flanges for suction and return pipes on tanks up to and including 1700 gallons. The same openings are furnished in all the larger tanks except the clean-out, which is increased in size from $3\frac{1}{2}$" to 8"x10".

FINISH: Blue steel, rust resisting, mineral paint

GRAVITY EMPTYING DEVICES

DETAILS: $\frac{1}{2}$ ton chain hoist, barrel dash, suitable length of barrel track, and suitable barrel cradle for tanks up to and including 1700 gallons. Figure 135-B Portable Barrel Drainer and 3" Figure 174 Fill Box for larger tanks. *(For complete data on these items see Gravity Emptying Device Bulletins).*

STORAGE INDICATOR: Figure 201 Indicator Board installed on outside of tank. Shows approximate quantity of liquid in tank. (See Bulletin for complete information.)

PUMPING UNIT

FIGURE 1709 SPECIAL: Motor driven rotary type. One furnished with each system. (Motors are not furnished standard). See tables below for complete data. For dimensions and further details see Figure 1709 Bulletin.

SWITCH: Push button type. Kicks in starter which in turn starts motor.

RELIEF VALVE: For installation in discharge line. Maintains constant pressure in the lines. Set to open when pressure becomes excessive and allows liquid to by-pass back to tank. Affords full circulation and agitation.

PRESSURE GAUGE: Indicates pressure on lines.

GATE VALVES: Furnished with weighted handles. For installation at press founts to control discharge.

ACCESSORIES

(Furnished at extra cost)

MOTORS: To suit current to be used and of sufficient size to operate pump and deliver required amount of ink. See tables below.

If customer furnishes motor, it must be sent to us for mounting.

STARTER: Automatic, for protection of motor

NUMBER OF UNITS FURNISHED STANDARD WITH EACH SYSTEM

	4 Fount System	8 Fount System	12 Fount System	16 Fount System	20 Fount System	24 Fount System	28 Fount System	32 Fount System
Storage Tank	1	1	1	1	1	1	1	1
Gravity Emptying Devices:								
Barrel Dash	1	1	1					
Barrel Cradle	1	1	1					
Chain Hoist, $\frac{1}{2}$ ton	1	1	1					
Barrel Track (feet furnished)	7	8	10					
Barrel Drainer, Figure 135-B				1	1	1	1	1
Fill Box, 3", Figure 174				1	1	1	1	1
Storage Indicator, Figure 201	1	1	1	1	1	1	1	1
Power Pumps	1	1	1	1	1	1	1	1
Push Button Switch	1	1	1	1	1	1	1	1
Relief Valve	1	1	1	1	1	1	1	1
Pressure Gauge	1	1	1	2	2	2	2	2
Weighted Handle Gate Valves, $1\frac{1}{4}$"	4	8	12	16	20	24	28	32
System Shipping Weight, pounds (approx.)	1450	2150	2900	3050	3500	4350	6100	6400

GENERAL SPECIFICATIONS

Number of Founts	Capacity of Tank Turn bod (Gallons)	Gauge of Tank Steel	Dimensions of Tank in Inches: Height	Width	Length	Size Suction Pipe	Pump G.P.M.	Motor H.P.	Motor R.P.M.	Size Suction Pipe	Size Discharge Pipe	Size Relief Valve	Maximum Length Discharge & Return Pipe
4	585	$\frac{3}{16}$"	37	50	80	$1\frac{1}{4}$"	12	$1\frac{1}{2}$	1200	$1\frac{1}{2}$"	$1\frac{1}{2}$"	$1\frac{1}{4}$"	100'
8	1225	$\frac{3}{16}$"	49	68	92	$1\frac{1}{4}$"	12	$1\frac{1}{2}$	1200	$1\frac{1}{2}$"	$1\frac{1}{2}$"	$1\frac{1}{2}$"	100'
12	1700	$\frac{3}{16}$"	55	68	113	$1\frac{1}{2}$"	20	2	1200	2"	2"	2"	125'
16	2000	$\frac{3}{16}$"	73	62	110	$1\frac{1}{2}$"	20	3	1200	2"	2"	2"	275'
20	2600	$\frac{3}{16}$"	73	68	128	$1\frac{1}{2}$"	20	3	1200	2"	2"	2"	275'
24	2970	$\frac{3}{16}$"	73	68	146	2"	35	5	1200	2"	2"	$2\frac{1}{2}$"	450'
28	4035	$\frac{1}{4}$"	97	92	110	2"	35	5	1200	2"	$2\frac{1}{2}$"	$2\frac{1}{2}$"	600'
32	4550	$\frac{1}{4}$"	97	92	124	2"	35	5	1200	2"	$2\frac{1}{2}$"	$2\frac{1}{2}$"	600'

If the length of the combined discharge and return pipe lines exceeds the figures given in above table, it will be necessary to increase the size of discharge and return pipe one or two sizes, or increase the H.P. of the motor, or probably both.

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Airport Fueling System

The Bowser Figure 294 Airport Fueling System is designed for rapid, accurate, efficient and economical fueling of aircraft. It is especially designed to meet the need for an inexpensive, compact, practical outfit complete with pumping equipment and serving equipment, each assembled in a separate pit box so that installation can be made to suit individual requirements, either in or above the ground, at points most convenient on the field.

Like the Bowser Figure 232 Fueling System, the Figure 294 is ideally suited for small ports and landing fields whose fueling requirements do not justify the expense of the more complete facilities embodied in the Bowser Figure 230 Systems.

The Figure 294 System is built in the 1 1/4" size only, capable of delivering approximately 25 gallons per minute. The complete standard system consists of a steel *service* pit which contains a Bowser Xacto Meter, strainer, pressure gauge, gate valve, control switch, nozzle and hose platform—and a *pumping unit* pit which contains a pump and motor. All necessary piping is completely assembled inside both pits — ready for immediate installation, and operation after connection to gasoline and electrical lines.

While the standard Figure 294 System does not include a Centrifugal Filter and Air Release (see reverse side under "Equipment Furnished at Extra Cost"), Bowser recommends the use of these units where utmost accuracy, regardless of operating conditions, and safety are desired, and where installation of these units can be satisfactorily accommodated.

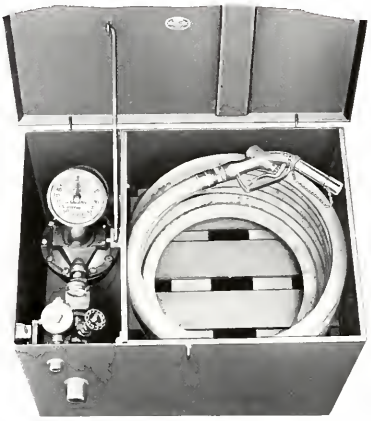

FIGURE 294 SERVICE PIT AND SERVING EQUIPMENT
Gasoline Hose Is Not Furnished Standard

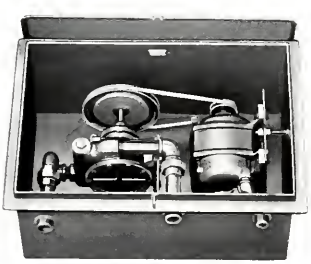

FIGURE 294 PUMPING UNIT PIT AND PUMPING EQUIPMENT

SERVICE PIT

The Figure 294 Service Pit is built for installation in the ground with the top set a few inches above the ground level and the surrounding ground sloped up to the top of the pit to provide drainage for surface water. When the flanged lid is closed, the pit is water-tight and is built to withstand planes taxiing over it without danger. The cover is fitted with lifting handles which afford easy access to the inside of pit. A lock clip and lug permit locking with padlock. A 1/2" dia. steel rod, welded to the top side of pit around hose compartment, prevents damage to hose when withdrawing it from pit. A wooden platform, fixed 15" from the top of pit in hose compartment, provides for handy storage of hose and nozzle.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

Airport Fueling System [FIGURE 294]

PUMPING UNIT PIT

Gasoline is supplied to the Service Pit by a pumping unit built into a pit box which is designed for installation in the ground but may be located above ground at any desired point. When the flanged lid is closed, the pit is water-tight. It is built to withstand planes taxiing over it without danger. The lid is removable and fitted with lock clip which fastens over lug on pit permitting locking with padlock.

The pumping unit consists of a $1\frac{1}{4}$", belt-driven, positive displacement pump, capable of delivering approximately 25 gallons per minute. Integral with the pump is a by-pass relief valve which opens at 15 pounds pressure, allowing gasoline to circulate after discharge from hose has been stopped, and as long as the pump is in operation.

The pump is of the slow speed, high-vacuum producing type. Its design is such that a high speed delivery is rendered with an exceptionally slow movement of the working parts, insuring quiet, trouble-free and long life operation. It is fitted with a unique packing and oiling arrangement which requires very little attention.

Starting and stopping of the pump, which is powered through "V" belt transmission by a vapor-proof, totally-enclosed, 1 H. P. 110-220 volt, single phase, 60 cycle, A.C. motor is controlled by a vapor-proof switch located in the Service Pit. The motor is secured inside the pit by means of a "floating" mounting bracket which permits adjustment of drive belt. Swing joint in conduit line facilitates belt adjustment.

Specifications

STANDARD EQUIPMENT

SERVICE PIT

PIT DETAILS:

CONSTRUCTION: Shell, bottom, cover and partition of 10-gauge tank plate all welded. Pit fitted with $\frac{3}{4}$" coupling for conduit line and $1\frac{1}{2}$" coupling for gasoline line.

DIMENSIONS: 30" high, 30" wide, 42" long.

FINISH: Inside and outside metalastic gray.

METER: Fig. 770, size $1\frac{1}{4}$", maximum capacity, 25 G.P.M.

*NOZZLE: Fig. 573-A, $1\frac{1}{4}$" size, pistol grip, wet-hose type.

STRAINER: Figure 730, $1\frac{1}{4}$" size.

GATE VALVE: $1\frac{1}{4}$" size.

PRESSURE GAUGE: Registers pressure up to 60 lbs.

CONTROL SWITCH: Lever type, explosion-resisting, Underwriters' approved. Raising the lever closes the circuit and starts the motor—forcing lever down, breaks the circuit and stops the motor. When the circuit is closed, the lever extends above the top of pit body so that when the lid is dropped, the lever is automatically forced down and the circuit is broken.

VALVES AND PIPING: All necessary valves and piping inside pit furnished completely installed.

PUMPING UNIT PIT

PIT DETAILS:

CONSTRUCTION: Shell, bottom and cover of 10 gauge steel all welded. Pit fitted with $\frac{3}{4}$" coupling for conduit line and two $1\frac{1}{4}$" couplings one for suction and one for discharge line.

DIMENSIONS: 15" high, $21\frac{1}{2}$" wide, 32" long.

FINISH: Inside and outside metalastic gray.

PUMP: $1\frac{1}{4}$" size, "V" belt drive, positive displacement type, capacity, 25 G.P.M. maximum, mounted securely in pit. By-pass, integral with pump, set at 15 lbs.

MOTOR: 1 H.P. 110-220 volt, single phase, 60 cycle, A.C. Motors of other specifications may be furnished at extra cost upon application. Motor is of the vapor proof type, labeled by Underwriters'. All orders must specify current, voltage, phase and cycles. Motor is secured to pit by means of a special mounting which permits adjustment of drive belt. Swing joint in conduit line.

SHIPPING WEIGHT: Complete Figure 294 System 770 lbs., approx.

EQUIPMENT FURNISHED AT EXTRA COST

CENTRIFUGAL FILTER: Figure 255-A, $1\frac{1}{4}$" size. Provides for the removal of water, moisture or dirt from the gasoline insuring the delivery of clean, dry fuel. It is intended for installation on the discharge line as near the pump as possible.

AIR RELEASE: Fig. 773, $1\frac{1}{4}$" size. Provides for the separation and escape of any air which may be in the liquid and which unless removed causes inaccuracy in measurement. For efficient operation, this air release should be located as near the pump discharge outlet as possible and at a point higher than the pump.

NOTE: Since the Pumping Unit Pit is not large enough to accommodate installation of the Filter and Air Release, it will obviously be necessary to locate them in the discharge line outside the pit, above ground and above the level of the pump.

GASOLINE HOSE: 50' of $1\frac{1}{4}$" special airport hose.

TANK AND FITTINGS: Cylindrical storage tank of any capacity to 25,000 gallons complete with all fittings.

*For complete information on these items, see individual bulletins.

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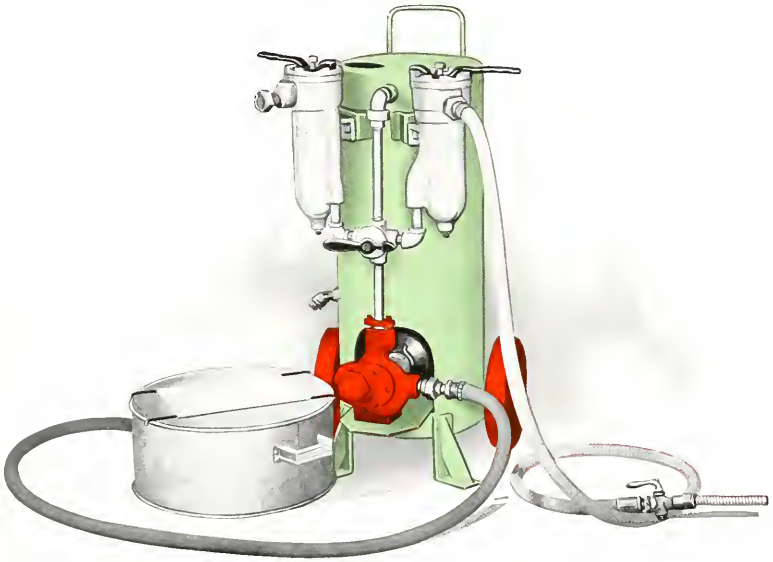
KLENZMOTOR

TRADE MARK

FIGURE 296

OSBORNE PROCESS PATENTS

Automotive Cleaning Service



ELECTRICALLY OPERATED KLENZMOTOR CLEANING MACHINE

For Cleaning the Interior of
Crankcases, Motor Oiling Systems, Transmissions and Differentials
of Automobiles and other Automotive Units

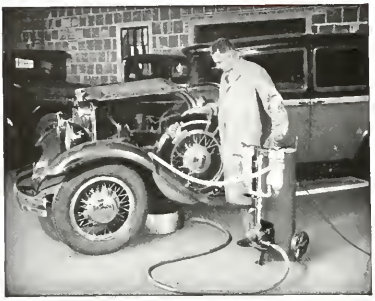
MANUFACTURED UNDER OSBORNE PROCESS PATENTS

U. S. PATENTS 1633283, 1696100, 1702702, 1702703, 1751053. CANADIAN PATENTS 271272, 301012, 305720
OTHER U. S. AND FOREIGN PATENTS PENDING

S. F. BOWSER & COMPANY, Inc.,

FORT WAYNE, INDIANA, U. S. A.

OSBORNE PROCESS PATENTS



Klenzmotor thoroughly cleans crankcases, oil lines, oil pumps and bearings.

A long needed service

THE Klenzmotor Cleaning Machine *is not a gear flusher* but is a portable device which quickly and efficiently washes out the interior of the Crankcases, Motor Oiling Systems, Transmissions and Differentials of automobiles, trucks, tractors, airplanes, compressors, etc. This *exclusive* service now permits the giving of these vital automotive parts the much needed service of thoroughly washing them thereby properly preparing them for the refill of new lubricating oils or greases.

Klenzmotor service now makes available a thorough motor cleaning service that has not heretofore been possible. Not only does Klenzmotor completely wash out the crankcase but it cleans the oil lines, oil pump, motor bearings and gears of sludge, metal abrasives, road dust, sand, water, acids, hard carbon and other harmful foreign matter which accumulate in every motor. The cleaner the crankcase the better job the new Lubricating Oil will do. Better motor lubrication means less depreciation, minimum maintenance expense and maximum motor performance and mileage.

Klenzmotor Crankcase cleaning service is remarkably quick, and the most efficient method ever developed for washing out the interior of the Crankcase and Motor Oiling System. There is no other *preventive* motor service like it. It is a new and original service by which the Crankcase is not only cleansed of all foreign, injurious matter, but, at the same time, the oil pump, oil lines, motor bearings, gears, etc., are washed clean. Even the expensive practice of taking down the Crankcase will not make possible the splendid results obtainable with the use of the Klenzmotor Machine for Klenzmotor washes out *bearings* and *oil lines* at the same time it washes out the crankcase.

Klenzmotor properly prepares the motor crankcase for new oils and prevents their immediate contamination by a residue of foreign matter which is always left in the crankcase when simply drained or flushed in the ordinary way. *Klenzmotor is a proven service and has the endorsement of many internationally known motor car manufacturers.*

Crankcases quickly cleaned

Operation of the machine is extremely simple. It is the result of years of experience by Lubrication Engineers in the designing and building of efficient lubrication and oil filtration equipment. The drain plug of the Crankcase is first removed and the dirty oil either drained into the drain pan of the Klenzmotor Machine, from which it is pumped into the used oil receptacle of the machine for later disposition or is disposed of in the usual manner.

The *cleansing lubricant*, two quarts more than the Crankcase capacity (**never use kerosene for cleaning Crankcase**), is then, by the use of the Klenzmotor Machine, circulated through the idling motor for a period of approximately five minutes. Since the machine is capable of circulating six gallons per minute, there is approximately thirty gallons of cleaning lubricant circulated through the motor during the cleaning process.

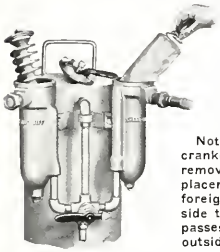
Klenzmotor forces the oil into the oil fill pipe of the motor from where it thoroughly circulates through the Crankcase and Oiling System before returning to the Klenzmotor drain pan which is placed underneath the open Crankcase drain. From this point the cleansing lubricant is picked up, is forced through the filter and again pumped into the motor, thus providing a continuous cyclic cleaning operation.

Harmful foreign matter which unavoidably accumulates in every motor crankcase (sludge, road dust, metal abrasives, water, acids, hard carbon, dilution, etc.), *regardless of whether or not the motor is equipped with an oil filter* or air cleaner, are all washed out by the Klenzmotor Process and the special filter of this equipment prevents their return to the motor.

Lubrication values protected

After the thorough cleaning by Klenzmotor, the Crankcase drain plug is replaced and the

fresh, clean motor oil is put into a clean motor and thus is not immediately contaminated nor is its lubricating value immediately impaired, which would be the case without the use of this cleaning service. The cleaning lubricant after being used on a motor is not used for cleaning additional cars.



View showing the filtration process used in transmission, differential and crankcase filter sections.

Note how simply and easily crankcase filter bag may be removed for cleaning and replacement. All dirt and other foreign matter is retained inside the filter bag, as the oil passes from the inside to the outside during the filtration process.

A complete cleaning service

Transmissions and Differentials and the interior of other types of enclosed gear housings are also efficiently washed out with this same principle of cyclic cleansing. For cleaning such mechanisms, kerosene or a mixture of kerosene and distillates is used as the cleansing agent and the centrifuge filter section of the Klenzmotor Machine is then used to separate the heavy dirt and greases from the cleansing agent before it is again circulated into the receptacle being cleaned.

Efficiently washes out transmissions and differentials.

Inexpensive--it reduces upkeep

Klenzmotor service is easy and economical to render. It costs the motor car owner but little more to get this preventive service—yet the advantage in getting better motor performance, minimized maintenance and repair costs more than offsets the slight additional cost. Klenzmotor service is the cheapest insurance any motorist can buy.

Can be used any place

No attachments are necessary to the motor being serviced and there is no danger of damage to the motor or of injury to the attendant. Klenzmotor service can be rendered by any station attendant, garage employee or mechanic and applied in the station driveway, on the garage floor, over the drain pit or on the lift.

Motor car owners like it

Klenzmotor service and the Klenzmotor Cleaning Machine not only fill the real need of a simple and efficient motor cleaning service but is a service that can readily be made to attract and maintain a larger volume of oil and grease sales at the Service Station or Garage. It is also a most desirable and economical service for any car dealer, fleet owner or repair garage to install and use in their establishment. It is a profitable and inexpensive service which the motorist will appreciate and patronize. It not only gives a new source of profits as a cleaning service but can be made to positively build up your volume of motor oil and grease sales.

Another Important Klenzmotor Service

Another important need in automotive servicing has been fulfilled by Klenzmotor in the washing out of motors that have been rebored and honed and motors of new cars, thus making sure that all traces of grinding and honing compounds, core sand and other substances which are injurious to the bearings, cylinder walls, pistons, piston rings, etc., are completely removed so that the motor is properly prepared for receiving the new oil and the customer is assured maximum operation and lubrication efficiency.

Adjusting plug by means of which drain flow is reduced from crankcases having large drain openings.

Don't pass up these profits!

Klenzmotor opens a new market for the sale of motor cleaning lubricant in large quantity, hence—a new profit—one you have not had before, enabling you to increase your oil change profits 50%.

In the following Profit Analysis, our figures are based on at least 20c profit on a gallon of cleaning lubricant, when retailed at 40c a gallon, and 50c profit on a gallon of motor oil.

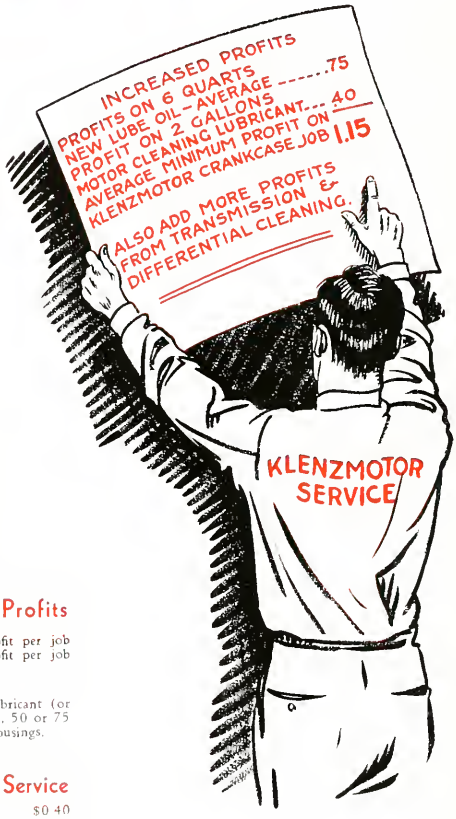
Crankcase Cleaning Profits

2 gal. cleaning lubricant per car at 20c a gal. profit = $0.40
Average 6 qts. refill motor oil at 50c a gal. profit = .75

Profits in Klenzmotoring Crankcase $1.15

Cleaning 1 crankcase a day—Profit of $ 419.75 per year
Cleaning 2 crankcases a day—Profit of 839.50 per year
Cleaning 3 crankcases a day—Profit of 1,259.25 per year
Cleaning 4 crankcases a day—Profit of 1,679.00 per year
Cleaning 5 crankcases a day—Profit of 2,098.75 per year

REMEMBER: A 100 car clientele averaging 6,000 miles each per year, and changing oil every 1,000 miles, means six Klenzmotor jobs each per year, or a total of 600 Klenzmotor jobs. At $1.15 profit per job, the total yearly profit will be—$690.00.



Transmission and Differential Cleaning Profits

Differential Cleaning averages about 40c profit per job
Transmission Cleaning averages about 35c profit per job

An additional profit of about ..... .75c

The above profits are only those derived from the cleaning lubricant (or kerosene) and new greases. In addition, a service charge of 35, 50 or 75 cents could be made to cover operator's time in servicing gear housings.

Profits on Complete 3-point Klenzmotor Service

Crankcase	Profit on 2 gal. cleaning lubricant	$0.40
	Profit on 6 qts. refill motor oil	.75
Transmission	Profit on 1½ gal. kerosene used as cleaner	.10
	Profit on 2½ lbs. refill grease (average car)	.25
Differential	Profit on 1½ gal. kerosene used as cleaner	.10
	Profit on 3 lbs. refill grease (average car)	.30

Total profit on complete 3-point Klenzmotor Service - - $1.90

NOTE: Cost of electric current (based on rate of 5c per K. W. hour) amounts to only a half cent on each crankcase cleaning job.

Protect the Lubricating Value of Your Motor Oils with Klenzmotor!

Bottle No. 1 shows the color of old oil as drained from a crankcase.

Bottle No. 2 shows the color of new oil after a few miles of service in a crankcase which has not been "Klenzmotored."

Bottle No. 3 shows the color of new cleaning lubricant used with Klenzmotor service.

Bottle No. 4 shows the color of cleaning lubricant after it has been used by Klenzmotor in cleaning the inside of a motor.

Bottle No. 5 shows the color of new oil after many miles of service in a crankcase that has been "Klenzmotored."

Compare Bottles 2 and 5

Imagine how a motorist feels if he tests or looks at his oil *one hour* after you have sold him an "oil change" and finds that the new, clean oil he *just bought* is black, dirty and full of grit? That his feelings will be unfavorable, is a certainty. And that is just exactly what happens every time clean oil is poured into a dirty crankcase.

Remember This Undisputed Fact:

Profit, by Eliminating this Bad Practice, with Klenzmotor!

MERCHANDISING KLENZMOTOR SERVICE

Success in building up the patronage of any service or product is directly dependent upon your merchandising and sales effort. Regardless of what it is, you must tell your customers what you have to offer and convince them that it is just what they want and need.

Klenzmotor is a splendid service with which to attract and hold motorists' interest. It has so much real value to the motor car owner that with reasonable merchandising effort you can not only get him to use the service, but to ask for it regularly.

To assist you in bringing this new service to motorists' attention without delay, we will furnish gratis with each Klenzmotor machine a large 8 oz. canvas banner (3 ft. x 7 ft. 6 in.), attractively lettered in black on yellow background, and reading as shown in the illustration below.

This attractive banner furnished with each machine

In addition to the banner, we will also furnish gratis with each machine 500 copies of the pamphlet illustrated below, entitled "6 Dangers, and how to dodge them!" Space is provided on the back of these pamphlets for rubber-stamping or imprinting your name and address, and they can be handed out to customers while at the station, or mailed out with your monthly statements or to your mailing list. Additional supply at small cost.

In addition to the Merchandising Services furnished gratis with each Klenzmotor machine, we will also furnish free a "Selling KLENZMOTOR SERVICE" Instruction Manual containing Questions and Answers which explain the service and when carefully studied enable you to do a real job of selling the service to your customers.

At a nominal charge, we can also supply a series of three attractively printed mailing cards in lots of 500 each. These cards are especially effective in acquainting your regular customers with the value of Klenzmotor service.

500 of these folders are furnished free with each Klenzmotor Machine.

500 each of this series of three mailing cards will be furnished at nominal charge.

A copy of this KLENZMOTOR SERVICE Selling Manual is furnished free with the machine. Additional copies for each attendant may be had gratis upon request.

USE KLENZMOTOR MERCHANDISING SERVICE

Many Klenzmotor owners will want to explain this new motor cleaning service more fully to their regular customers and others. For this purpose we have prepared an attractive four-page letter folder, chock full of interesting information and appeal to the motor car owner. The full front page, which bears an appropriate heading, is available for your letter, while sufficient space is left on the back for you to stamp or imprint the address of your stations.

If you wish to use this letter-folder, tell our representative or write us direct, and we will send you 500 copies free of charge. If additional quantities are required, we will furnish them at a nominal cost.

No Dilution Danger

Prominent Lubrication Engineers in the Oil Industry state definitely that the amount of motor cleaning lubricant which remains in the crankcase or oil filter after flushing a motor is negligible and is not detrimental to the lubrication value of new motor oil. They further state that washing out the crankcase and oiling system for the removal of steel particles, sand, road dust, carbon and other injurious foreign matter, before refilling with new oil, is a most important and necessary service. *Klenzmotor is the most effective service known for this particular work.*

Lubrication Engineers Say:

"The amount of—(trade name of flushing oil) that would be found would only affect the oil in the crankcase by slightly lightening its body and perhaps this would not amount to more than one or two Saybolt seconds at 100° F and certainly could not be detected at the operating condition of the motor, say 140-160 crankcase oil temperature."

—Los Angeles, Calif

"Flushing oil while very light in body is not detrimental to the lubrication of a motor even under high speed conditions."

—Kansas City, Mo

"The reduction of viscosity, flash and fire points resulting from small quantities of Flushing Oil remaining in the crankcase will have very little if any detrimental effect on the lubricating value of the oil. The detrimental effect of small quantities of dirty motor oil containing small particles of steel, sand, road dust and carbon, will be far greater than any possible effect of any quantity of Flushing Oil remaining in the system."

—St. Louis, Mo.

"Flushing Oil is in itself a lubricating oil which if remaining in the crankcase will not materially reduce the viscosity of new oil. It is very essential that a Flushing Oil be used before introducing new oil into a crankcase in order to eliminate the road dust and sediment which would normally accumulate in the used oil."

—California.

"The loss in viscosity or body suffered by good motor oil because of the small percentage of Flushing Oil which might be left in the oil lines and sump is negligible and in fact simply performs the function of any normal "break in" oil."

—Philadelphia, Pa.

"Was proven by extensive laboratory tests which showed that the amount of dilution is not sufficient to be of any practical importance. Laboratory tests have likewise proven that the amount which gets into the oil filter during the few minutes the oil is in the crankcase amounts to practically nothing."

—New York City.

BOWSER

KLENZMOTOR

TRADE MARK

CLEANING SERVICE

OSBORNE PROCESS PATENTS

Klenzmotor Service, Your Most Effective Means of Competing Against the Motor Oil Price Cutter

Klenzmotor Service has established itself as the one effective way to meet the price cutting competition introduced in motor oil selling by the "squatter" oil seller on the vacant lot, the chain store, and others not equipped to render modern lubrication services.

Klenzmotor is a proved motor service that every motorist not only needs, and asks for, once you tell him of its benefits, but a service which, because of its unusual merits, you can easily introduce and merchandise.

Your customers, when Klenzmotor conscious, will readily appreciate the folly of pouring clean, carefully refined oil into a crankcase and oiling system virtually loaded with dirt, metal chips, road dust, carbon and other harmful matter. They will quickly see that this practice immediately impairs the lubrication value of good oil. They will then realize the value of Klenzmotor —the importance of thoroughly cleaning and properly preparing the motor for the new oil, and know that such a needed service cannot be rendered at home, received by mail or obtained from the oil seller on the vacant lot.

Klenzmotor, with effective merchandising, has definitely proved its ability to overcome cut-price motor oil competition. It has demonstrated its power to bring in more customers and build sales of lube oil, motor cleaning lubricant, grease and other items. Regular customers appreciate Klenzmotor Service and new customers are attracted by it. One marketer on the west coast recently reported that in ten months Klenzmotor increased his oil and grease business 40%. Other marketers have profited similarly with Klenzmotor.

Specifications

Standard Electric Klenzmotor Cleaning Machine

STANDARD FINISH: Tank, special Klenzmotor green enamel; pump and tank wheels, red enamel; filter, pipe, pipe fittings and valve body, aluminum finished; valve handle and filter cap handles, black enamel, galvanized drain pan not painted.

CRANKCASE FILTER SECTION: Consists of filter body, special removable cap with adjustable handle attached, one removable cloth filter bag and retaining spring; drain plug; outlet hose connections.

TRANSMISSION AND DIFFERENTIAL FILTER SECTION: Consists of filter body; special removable cap with adjustable handle attached; removable centrifugal filter spiral complete; drain plug; outlet hose connections.

NOTE: Discharge opening is equipped with a removable cap which should be placed on discharge opening of either filter section which is not being used.

TANK SPECIFICATIONS: Ten gallons capacity for used oil, welded construction; 14-gauge shell and 12-gauge heads of blue annealed steel; equipped with two 2½ in. x 9 in. iron wheels and solid axle extending through and welded to tank shell; draw-off plug, 3 in. diameter opening in top; two supporting feet and handle welded to tank.

CONTROL VALVE: Special four-way brass control valve with handle pointer indicating direction of discharge.

PUMP: Motor driven rotary pump complete with built-in adjustable by-pass valve; capacity approximately six gallons per minute; 1725 R.P.M.; pump shaft equipped with flexible coupling; mounted on heavy steel plate platform with direct connection to motor

MOTOR AND ELECTRICAL CONNECTIONS: Standard with ¼ H.P. single phase, 60 cycle, 110-volt, 1725 R.P.M. motor; mounted on heavy steel plate platform and properly protected by the tank shell which is extended below bottom of tank; motor control switch located on motor. 15 feet of heavy rubber covered service cord equipped with separable attachment plug and female attachment body. Motors of specifications other than those listed above can be furnished at additional cost, upon application.

HOSE: (Discharge): 6 foot length of ½ in. metal lined flexible hose with couplings, brass union and shut-off nozzle with removable tips, one ½" flexible tip, and one ¼ in. solid tip (Suction): 8 foot length of ¾ in. oil resisting rubber hose with fittings and brass seated unions.

DRAIN PAN: Constructed of 22-gauge galvanized sheet steel; size, 18 in. diameter x 7 in. high; all seams fully soldered and top and bottom edges rolled with heavy wire reinforcing; equipped with special removable suction strainer, outlet and union hose connections, special sloping bottom construction and equipped with carrying handle. Equipped also with removable screen splash eliminator.

ADJUSTING PLUG: One special adjusting plug for attaching to large crankcase openings for reducing drain flow. (See illustration.)

MISCELLANEOUS: With each machine, in bag attached to control valve handle there are complete operating instructions and parts list, one extra filter bag and the adjusting plug. Each machine is packed complete in one shipping crate.

DIMENSIONS: Height over all, 37 in.; maximum width, 22 in. (not including drain pan and hose).

SHIPPING WEIGHT: (Approximately) 205 pounds

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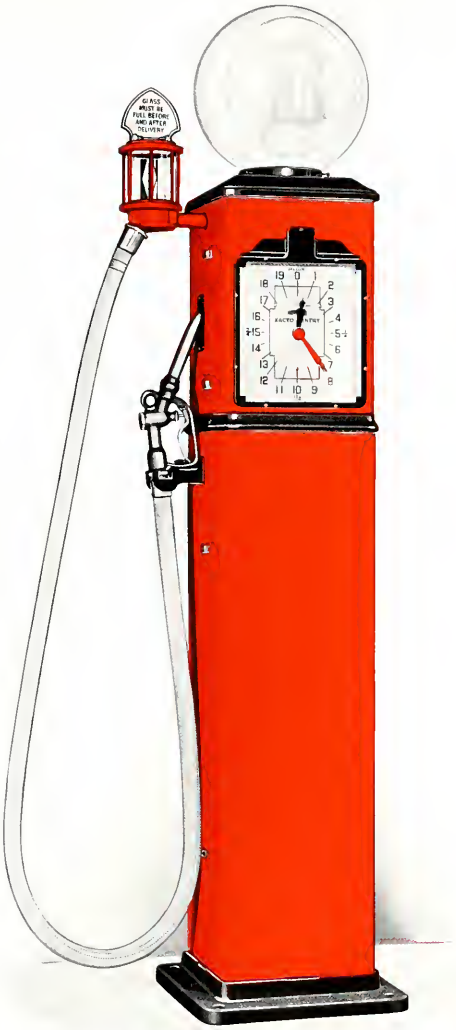
DEPARTMENT OF PRINTING



BOWSER
ESTABLISHED 1885

XACTO SENTRY

FIGURES 410 *and* 411

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

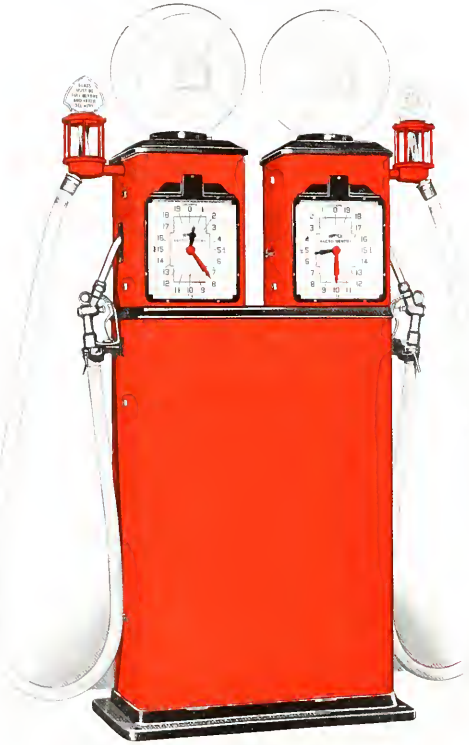


Figure 411 "Twin" Unit

The "twin" model combines two complete "single" models in one compact housing, each unit equipped with individual pump, motor, meter, etc. Of special importance to marketers is the split-top feature of the "twin" model, permitting individual color combinations, trade-marks, etc., to be used with the same ease and advertising value as though the two pumps were distinctly separate. Globe adapters may be adjusted to permit use of 18 inch diameter globes, mounted as shown in the above illustration.

THE New Bowser Xacto Sentry embodies the same dependable accuracy by the well known Bowser Xacto Meter, the same efficient pumping unit, and the same high quality which has always characterized Bowser SENTRY Pumps and NOW it incorporates new features, new refinements and a new appearance that unquestionably makes it the peer of retail gasoline dispensers.

It is built in two models, the "Single" unit, Figure 410 and the "Twin" unit, Figure 411. Both models embody all the latest advancements in design and improvements in construction and share in common the following valuable service and merchandising features.

Dependable Accuracy by Positive Volumetric Displacement

Xacto Sentry employs as its measuring instrument the Bowser Xacto Meter, known and used throughout the world. Xacto Meter measures by positive volumetric piston displacement, assuring the highest degree of accuracy, well within Sealers' strictest tolerances, even under the most difficult operating conditions. It may be adjusted to a degree of accuracy within 1 10 of 1% perfect. Whether the liquid is being delivered fast or slow, with pressures fluctuating from 1 to 15 pounds or more, Xacto provides the same consistent accuracy, always.

Within the meter are five cylinders, each fitted with a piston connected at its lower end to the rim of a plunger control plate. As the gasoline flows into the cylinders on one side of the plunger control plate, the liquid in the cylinders on the other side is being discharged through a

XACTO METER

The Measuring Instrument in

Xacto Sentry Pumps

Inside view of Xacto Meter, showing the measuring chambers and positive displacement pistons

rotary valve. This valve wipes across the top of each cylinder, removing the surplus liquid and insuring the measurement of an exact cylinderful by each cylinder on each cycle of operation.

The pressure of the flow causes the plunger control plate to assume a nutating motion, which in turn operates the recording mechanism. Every drop of liquid that enters the inlet of the meter must pass through one of the cylinders, where it actually displaces the piston to the full adjusted capacity of the cylinder.

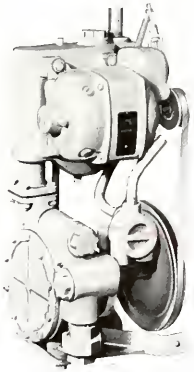
For adjustment of measurement in Xacto there is no by-passing of liquid from intake to discharge around the actual measuring chambers. On the contrary, adjustment to accuracy in Xacto is accomplished solely by increasing or decreasing the cubical capacity of the measuring chambers themselves. This adjustment is controlled by a single adjusting screw, operated on the outside of meter, which permits positive and stable adjustment to an exceptionally fine degree of accuracy. The adjusting screw is covered by a sealed cap.

Positive Air Elimination

Xacto Sentry's accuracy is further guaranteed under all operating conditions by the Bowser designed Air Release. The function of this device is to remove all entrained air from the liquid before it passes through the meter, thus assuring a solid flow of gasoline only to the meter and preventing the inaccuracies which would be caused by the presence of air. From this it will readily be observed that Xacto Sentry's accuracy is unaffected by faulty line or foot valves, leaky suction lines or even completely drained tanks. No meter can be accurate under all field conditions without an air release. See page 6 for further information.

Slow Speed Pumping Unit

Xacto Sentry's power unit has established its reputation with the trade as the most efficient, dependable and economical pumping unit yet furnished the oil marketers. It is a slow-speed, motor-driven pumping unit of a positive displacement, high vacuum producing type, built entirely in the Bowser factory. Its design is such that a high speed delivery is rendered with an exceptionally slow movement of the working parts, insuring quiet, practically noiseless, operation. Long life and freedom from service requirements are afforded by a nitralloy shaft and a unique packing and oiling arrangement requiring little attention by the operator. Complete repacking can be accomplished in a few minutes and will last as long as old fashioned packing far more difficult to install. It is powered through "V" belt transmission by a vapor-proof, totally enclosed motor.



The pump body, heads, and displacer are made of semi-steel. The blades are removable

and made of bronze. The drive shaft and eccentric are nitralloy and nitrided to give them a glass like finish. The screen and by-pass valve are integral with the pump. The drive shaft extends through a long bearing in the pump head and is packed with a special Bowser packing which makes an outboard bearing unnecessary.

The Bowser pumping unit is extraordinarily efficient on high lifts and long pulls. It eliminates entirely the necessity of priming on new installations or in cases of foot valve trouble or dry tanks. Delivery is ample to meet the most exacting requirements for rapid fueling service. The slow-speed characteristic is also an important factor in reducing wear and electrical current consumption to the absolute minimum. Electrical current consumption, and strain on the pumping unit are still further reduced by the air release which immediately exhausts all pressure after pumping ceases, thereby eliminating the pressure load on the next start.

Starting and stopping of the pump is controlled by a lever which extends through the housing at the nozzle hanger. Turning this lever so that it lies across the nozzle hanger, in the slot provided, actuates the motor switch and places the pump in operation. Thus the nozzle cannot be placed on the hanger until the switch lever has been removed and the pump stopped.

Sight Flow Indicator

A large sight bowl of light blue "Kromex" (Underwriters' Approved) provides visibility of the gasoline and also serves as an effective display for colored motor fuels. Being completely filled at all times the customer is assured that the pump is full before delivery starts, and through the medium of an attractive, noiseless spinner which revolves at the slightest movement of the gasoline the customer is assured that gasoline is actually passing through the sight bowl to his car. The top can easily be removed for cleaning without breaking any litharged joints.

Visibility

Two large rectangular dials plainly record and indicate the exact quantity of gasoline being delivered in individual transactions. The dials are of aluminum with sunburst finish, attractively framed in a modernistic setting. The dial hands are returned to "0" by one complete turn of the set-back knob which extends through the housing on the side of the pump.

The figures recorded by a continuous gallon counter, built into the face of one dial and concealed by a cable-operated shutter, form the basis for an exact check on all gasoline dispensed, showing the exact amount of gasoline receipts to be accounted for. 20-gallon dials are standard, but dials graduated in 5-gallon multiples recording up to 100-gallons can be furnished at extra cost, when desired and ordered.

Nozzle Control—Continuous Flow

The discharge of gasoline is controlled by a quick-acting, smooth-operating, nozzle of improved design. Attendants appreciate the smooth, positive, simple action afforded by this nozzle due to its ease of control under all serving conditions.

Locking Mechanism

When it is desired to lock the pump, the nozzle tip is inserted in the port hole and the nozzle guard and trigger are placed behind the horizontal lug on the hanger, which is rigidly attached to the housing. A padlock is then

placed through the lug, preventing removal of the nozzle tip from the port hole, removal of the nozzle body from the hanger, protecting the nozzle trigger against manipulation and preventing switch lever, which controls the starting and stopping of the pump, from being thrown over far enough to start motor and pump—a "four-way" tamper-proof locking mechanism.

Audibility

A clear toned bell automatically rings as each gallon is delivered, giving audible assurance to the customer of the number of gallons delivered.

Rapid Service

The speed of XACTO SENTRY is more than sufficient to meet the most exacting requirements. Gasoline tanks of even the largest size can be filled in short time with this fast-serving outfit.

The outstanding service and operating advantages built into Xacto Sentry are for the express purpose of enabling marketers to sell more gasoline, render better and faster service as well as build confidence in every transaction with customers.

Simple Installation

All outfits are complete and self-contained and need only to be connected to suction and return lines, and electric circuit to be ready for operation.

Pleasing Architecture

Xacto Sentries, both "Single" and "Twin," are designed to be very neat and symmetrical in themselves, presenting an attractive and pleasing appeal. At the same time they are unobtrusive and harmonize with any station design, setting or background. The housings are highly polished and finished in a high grade of red lacquer, or in the customer's colors, if so ordered, and then at nominal charge according to design.

Improved Illumination

By an ingenious yet simple arrangement of one 50-watt light bulb and two reflectors, both dials and the globe of the pump are brightly

View of the new lighting system.

The effect at night.

illuminated, and a material savings in current consumption is effected over former lighting methods requiring two or more bulbs.

Easy Access to Interior

Of noteworthy importance is the ease with which access is gained to the interior mechanism. The housing consists of four shells, two upper and two lower, held securely in place by eight latches which enable removal of entire housing in a few seconds. Replacement is just as simple and easy.

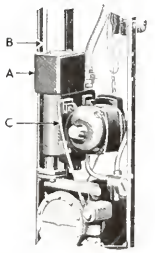
Sturdy Construction

The construction of Xacto Sentry is simple, yet exceptionally rugged and compact. The measuring unit, pumping unit and other apparatus are securely mounted in a rigid, structural steel frame, and are not required to sustain any weight. The entire unit is designed and built for a long life of satisfactory service.

Bowser Air Release

Xacto Sentry is furnished optionally with air release vented to the storage tank or direct to the atmosphere. While the former method of venting has been tested and proved most economical from a standpoint of preventing gasoline vapor losses, the vent direct to the atmosphere is designed to meet the need where installation of the return line to storage tank is deemed impracticable.

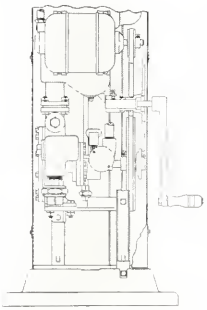
Illustration on Page Seven shows the air release which vents back to the storage tank. Illustration below shows a partial view of the Fig. 410 Xacto Sentry interior with air release vented direct to the atmosphere.



As the air separates from the liquid in the air separating chamber (A), it passes off to the atmosphere through vent pipe (B). Vent pipe (B) extends to within 1½" of the top of the dial housing and terminates in a screen cap outside the housing. When the liquid, which accumulates in the air separating chamber, reaches a certain level, a float controlled valve opens and allows the liquid to be withdrawn to the suction side of the pump through pipe (C).

Hand Operating Attachment

A special hand operating attachment of simple, sturdy design (shown in white in illustration) can be furnished for manually operating the outfit should electric current ever fail. This attachment is not furnished standard, and is included (at nominal additional cost) only when ordered.



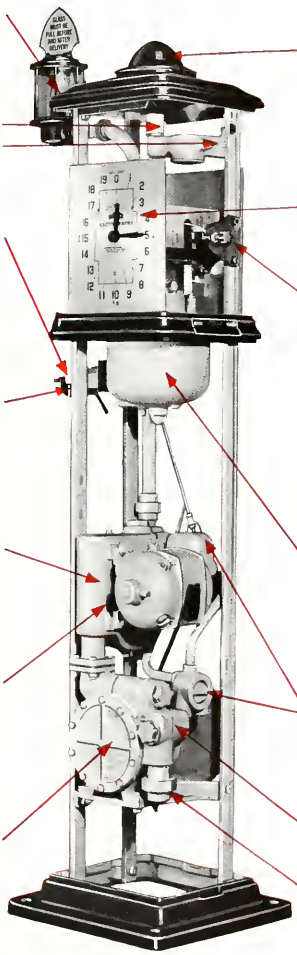
The complete attachment consists of a cast iron bracket, sliding gear, pump pinion and cast iron crank handle with wooden grip. The sliding gear is attached to the cast iron bracket and the pump pinion is fastened permanently to the pump shaft. Should the power be shut off, it is only necessary to insert the crank shaft into the opening provided in the housing — then by applying a slight pressure on the crank handle the sliding gear meshes with the pump pinion, and pumping may begin. Keeping this slight pressure on the crank, towards the pump, holds the gears in mesh. Should the power come on while turning the crank, no injury will result to the operator as the crank is automatically forced out of engagement.

Remote Control Operation

If desired, the Figures 410 and 411 can be furnished for remote control operation. Specifications on remote control units, identified as Figure 410-R and 411-R, will be furnished upon request accompanied by complete requirements.

Inside View of XACTO SENTRY

Figure 410 "Single"



VISIBILITY of gasoline as it is being served. Noiseless spinner revolves when gasoline is flowing. Top easily removable for cleaning inside of bowl — no litharged joints to break.

ILLUMINATION of both dials and globe is accomplished by one light bulb and two reflectors. Separate switch for light.

POSITIVE CONTROL of pumping operation by control lever which operates vapor-proof switch integral with motor. When control lever is placed across nozzle hanger, pump starts. Pump cannot operate when nozzle is placed on hanger.

FOUR-WAY LOCKING MECHANISM—When nozzle tip is inserted in port hole provided on side of upper housing and nozzle trigger and guard are locked behind lug to nozzle hanger with a padlock, the nozzle and pumping unit cannot be operated.

AIR RELEASE removes any air or vapor in the line, assuring a solid flow of gasoline to the meter; materially helps in making possible the extremely accurate measurement of the Meter.

CHECK AND RELIEF VALVE inside the Air Release keeps the meter and sight glass full of liquid at all times and relieves any excess pressure which may be created above the valve due to expansion of the liquid.

QUIET OPERATION by positive displacement. Practically noiseless. Power-driven by vapor-proof motor through "V" belt. High speed delivery of gasoline by slow-speed operation, insuring maximum efficiency at minimum operating expense. Produces a high vacuum. Primes itself on extremely high lifts.

GLOBE MOUNTING—Permits use of standard 6-inch diameter base display globes. Mountings for special size globes can be supplied at extra cost. If no globe is used, top of pedestal will be provided with an attractive acorn cap at no additional charge, when requested.

VISIBILITY OF MEASUREMENT—Two large rectangular dials accurately indicate the gallonage delivered in each transaction. Large red hand makes one revolution for each gallon. Small hand totals the number of gallons dispensed.

SIDE SET BACK KNOB—Returns dial hands to "0" with one complete backward turn.

GALLONAGE TOTALIZER keeps a continuous record of the gallons dispensed from 1 to 100,000 and repeats. Figures are concealed by shutter which can be raised only by pulling cable extending behind nozzle port hole.

ACCURATE MEASUREMENT BY POSITIVE DISPLACEMENT—The measuring unit in Xacto Sentry is the tried and proven Bowser Xacto Meter. Accurate measurement at any serving speed. Every drop of gasoline must pass through the measuring chambers. There is no by-pass.

WIRED COMPLETE ready for connecting to power line. Explosion-proof outlet boxes with double outlet standard. All electrical equipment approved by Underwriters' Laboratories.

CLEAN GASOLINE—Pumping unit is equipped with fine mesh strainer at inlet, thus protecting pump, pump by-pass relief valve and meter from any foreign matter in the gasoline.

QUICK CONNECTIONS—Suction located in corner; easily accessible; ample working room provided.

Specifications

FINISH: Housing, red lacquer; castings, black enamel. Special finish may be had at small additional cost.

CHARACTERISTICS: Self-contained; slow-speed pumping unit; rapid discharge; quiet and smooth operation; fire-proof; sturdy construction; graceful design; economical operation; accurate and dependable measurement.

MEASURING UNIT: 1¼" Bowser Xacto Meter. Positive displacement with positive adjustment.

DIALS: Rectangular type; two on each unit; glass covered; indirectly lighted by one 50-watt bulb (bulb not furnished), illuminates both dials and globe; aluminum finish with black lettering and figures; each fitted with two hands; large red hand makes one complete revolution for each gallon discharged; small black hand advances to next gallon graduation as each gallon is discharged; quart graduations indicate less than gallon deliveries; figures run from 1 to 20. (100-gallon dials furnished at extra cost.)

SET-BACK KNOB: Located on side of housing. Returns dial hands to "0" with one complete backward turn; hands cannot be set ahead.

COUNTER: Set in face of one dial on each unit; records to 100,000 gallons and automatically repeats; continuous operation; figures concealed by shutter which can be lifted only by pulling cable extending behind nozzle port hole.

BELL: Automatically rings as each gallon is delivered.

SIGHT GLASS: Indicates that pump is full before delivery; noiseless spinner inside glass revolves when gasoline is flowing. Access to interior for cleaning is easily and quickly gained. There are no litharged joints to break and cause trouble.

HOSE: 9 ft. 6 in. length of 1-inch metal-lined, fabric covered special gasoline hose.

NOZZLE: Fig. 590; self-closing (wet hose type); solid metal tip; trigger-operated throttling valve; approved by Underwriters' Laboratories.

LOCKING ARRANGEMENT: Four-way locking system; nozzle tip, nozzle trigger and nozzle guard interlocked in place by one padlock; switch lever prevented from being engaged, absolutely protecting outfit against unauthorized manipulation.

UNDERWRITERS' LABEL: All pumps bear Underwriters' Label approving outfit for inside or outside use.

AIR RELEASE: Furnished standard for venting back to storage tank or direct to atmosphere. Effectively removes all air from liquid; insures highest efficiency in operation of metering instrument; prevents measuring air as gasoline; absorbs any shock created by closing nozzle at end of hose. When vented back to tank, escape of vapors to atmosphere and resultant liquid loss is prevented. Specify type of Air Release desired, when ordering.

STRAINER: Incorporated in suction side of pumping unit to remove dirt and foreign matter from gasoline; protects pumping unit and meter.

PUMPING UNIT: Positive displacement, high vacuum producing, quiet running type. Screen, outboard bearing and by-pass valve integral with pump; 1¼-inch suction; driven by "V" belt; will prime self with exceptionally high suction lifts; drive shaft packed with special Bowser packing which requires very little attention; use of belt drive and provision of outboard bearing integral with pump eliminates any danger of binding due to misalignment. Pumping unit provided with by-pass valve set at 15 pounds.

MOTOR: Outfits standard with ⅓ H.P. vapor-proof 110-220-volt, single phase, 50 or 60-cycle motor, equipped with starting switch. Can be connected to 2-phase or 3-phase, 60 cycle currents if desired. We can also furnish single phase motors in 25, 30 or 40 cycles or 115 and 230-volt direct current (at additional cost). These latter motors not carried in stock. All orders must specify voltage, phase and cycle required.

ELECTRICAL EQUIPMENT: Switch for starting and stopping motor furnished. Explosion-proof outlet boxes with double outlet furnished standard. Outfits are wired complete, ready for connecting to light and power circuit. Separate switch for light is included standard.

GLOBE MOUNTING: Standard for mounting 6-inch diameter base globes. Special size globe mountings can be furnished at extra cost. If no globe is to be installed, ornamental cap will be provided at no extra cost, when requested.

CHECK VALVE AND RELIEF VALVE: Located in the air release body; keeps the meter and sight glass full of liquid at all times and relieves any excess pressure which may be created above the valve due to expansion of liquid. Spring closing, composition seat.

DIMENSIONS AND WEIGHTS

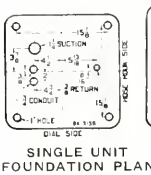
	"Singles"	"Twins"
Height to top of globe clamp	72"	72"
Height to top of ornamental cap	75"	75"
Height to top of Bowser globe	90½"	90½"
Dimensions of housing	12⅝"x13⅝"	31⅞"x12⅝"
Floor space required	18⅝"x18⅝"	36⅞"x18⅝"
Diameter of suction pipe	1¼"	1¼"
Shipping Weights (approx.)	365 lbs.	800 lbs.

EQUIPMENT FURNISHED ONLY WHEN SPECIFIED AND AT EXTRA COST

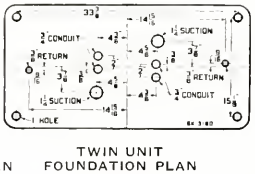
LINE VALVES AND FOOT VALVES: Line valves of single poppet type with bronze seats and poppets; seats removable; for installation in suction pipe above tank. Foot valves of double poppet type with bronze seats and poppets; for installation on lower end of suction pipe inside tank. Tank must have 3½-inch suction flange for foot valve to be installed. (Both line valves and foot valves furnished only at extra cost).

HAND ATTACHMENT: For manually operating outfit should electric current fail. Must be included when pump is ordered. Furnished only when ordered and at extra cost.

Padlocks; Adapters for special size Globes; Lamp Globes; Special Finish; Motors having current characteristics other than standard. 100-gallon Dial.



SINGLE UNIT
FOUNDATION PLAN
FIGURE 410



TWIN UNIT
FOUNDATION PLAN
FIGURE 411

Note: The air return is not needed when pumps are equipped with inside air releases.

The double conduit is used only when pumps are installed in series. For single pump installations, plug one outlet in conduit box.

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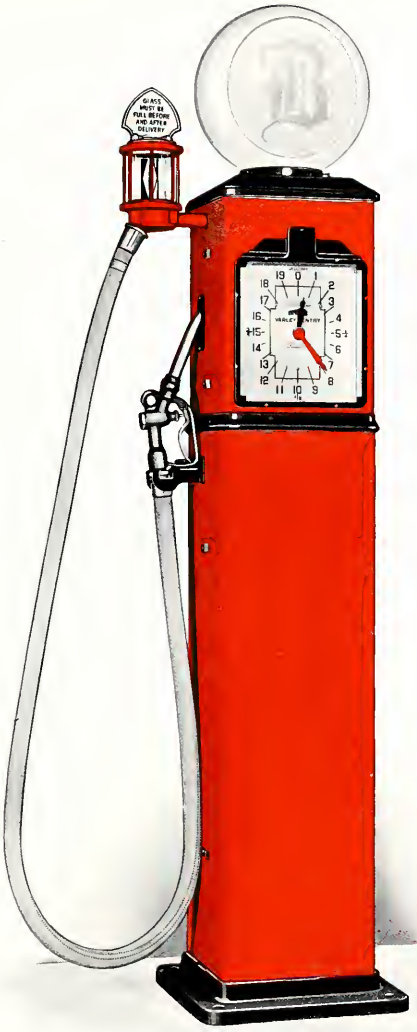


BOWSER
ESTABLISHED 1885

VARLEY SENTRY

FIGURES 418 *and* 420

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

Figure 420 "Twin" Unit

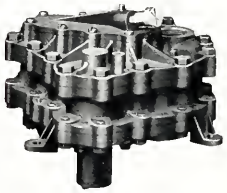
The "twin" model combines two complete "single" models in one compact housing, each unit equipped with individual pump, motor, meter, etc. Of special importance to marketers is the split-top feature of the "twin" model, permitting individual color combinations, trade-marks, etc., to be used with the same ease and advertising value as though the two pumps were distinctly separate. Globe adapters may be adjusted to permit use of 18 inch diameter globes, mounted as shown in the above illustration.

THE New Bowser Varley Sentry, with its improved, symmetrical exterior design, beautiful modernistic recording dials, unique lighting arrangement, quickly removable "latched" housings and other refinements coupled with the same dependable accuracy, the same efficient pumping unit, the same high quality which has always characterized Bowser Sentry Pumps, make this pump an outstanding value.

The New Varley Sentry is made in two models, the "Single" unit, Figure 418 and the "Twin" unit, Figure 420. Both models embody all the latest advancements in meter-pump design and construction and share in common the following important service and sales building features.

Dependable Accuracy

Varley Sentry employs as its measuring unit the Bowser Varley Meter which has established



Outside View of the VARLEY METER

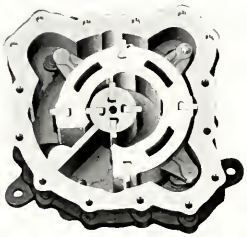
itself with gasoline marketers throughout the country by its unfailing, dependable accuracy under all conditions of service.

VARLEY METER

The Measuring Instrument in

Varley Sentry Pumps

The Varley Meter is an all-metal measuring unit as illustrated below. Dependable accuracy in measurement, within legal tolerances, is assured with delivery speeds ranging from a minimum of 5 gallons per minute to full flow.



Inside View of Varley Meter, showing the measuring chamber and displacer.

The measuring chamber of the Varley Meter is fitted with a displacer that travels in a circular path, the diameter of which is governed by three loose cranks driven by the displacer. One of these cranks in turn drives the recorder and dial mechanism.

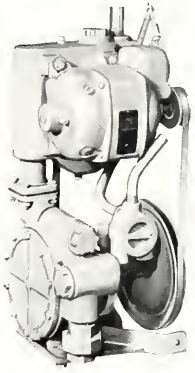
Adjustment for accuracy takes place within an auxiliary chamber of the meter, and is easily controlled by means of a screw extending to the exterior where it is covered by a sealed cap.

Positive Air Elimination

Varley Sentry's accuracy is further guaranteed under all operating conditions by the Bowser designed Air Release. The function of this device is to remove all entrained air from the liquid before it passes through the meter, thus assuring a solid flow of gasoline only to the meter and preventing the inaccuracies which would be caused by the presence of air. From this it will readily be observed that Varley Sentry's accuracy is unaffected by faulty line or foot valves, leaky suction lines or even completely drained tanks. No meter can be accurate under all field conditions without an air release. See page 6 for further information.

Slow Speed Pumping Unit

Varley Sentry's power unit has established its reputation with the trade as the most efficient, dependable and economical pumping unit yet furnished the oil marketers. It is a slow-speed, motor-driven pumping unit of a positive displacement, high vacuum producing type, built entirely in the Bowser factory. Its design is such that a high speed delivery is rendered with an exceptionally slow movement of the working parts, insuring quiet, practically noiseless, operation. Long life and freedom from service requirements are afforded by a nitralloy shaft and a unique packing and oiling arrangement requiring little attention by the operator. Complete repacking can



be accomplished in 5 minutes and will last as long as old fashioned packing far more difficult to install. It is powered through "V" belt transmission by a vapor-proof, totally enclosed motor.

The pump body, heads, and displacer are made of semi-steel. The blades are removable

and made of bronze. The drive shaft and eccentric are nitralloy and nitrided to give them a glass like finish. The screen and by-pass valve are integral with the pump. The drive shaft extends through a long bearing in the pump head and is packed with a special Bowser packing which makes an outboard bearing unnecessary.

The Bowser pumping unit is extraordinarily efficient on high lifts and long pulls. It eliminates entirely the necessity of priming on new installations or in cases of foot valve trouble or dry tanks. Delivery is ample to meet the most exacting requirements for rapid fueling service. The slow-speed characteristic is also an important factor in reducing wear and electrical current consumption to the absolute minimum. Electrical current consumption, and strain on the pumping unit are still further reduced by the air release which immediately exhausts all pressure after pumping ceases, thereby eliminating the pressure load on the next start.

Starting and stopping of the pump is controlled by a lever which extends through the housing at the nozzle hanger. Turning this lever so that it lies across the nozzle hanger, in the slot provided, actuates the motor switch and places the pump in operation. Thus the nozzle cannot be placed on the hanger until the switch lever has been removed and the pump stopped.

Sight Flow Indicator

A large sight bowl of light blue "Kromex" (Underwriters' Approved) provides visibility of the gasoline and also serves as an effective display for colored motor fuels. Being completely filled at all times the customer is assured that the pump is full before delivery starts, and through the medium of an attractive, noiseless spinner which revolves at the slightest movement of the gasoline the customer is assured that gasoline is actually passing through the sight bowl to his car. The top can easily be removed for cleaning without breaking any litharged joints.

Visibility

Two large rectangular dials plainly record and indicate the exact quantity of gasoline being delivered in individual transactions. The dials are of aluminum with sunburst finish, attractively framed in a modernistic setting. The dial hands are returned to "0" by one complete turn of the set-back knob which extends through the housing on the side of the pump.

The figures recorded by a continuous gallon counter, built into the face of one dial and concealed by a chain-operated shutter, form the basis for an exact check on all gasoline dispensed, showing the exact amount of gasoline receipts to be accounted for. 20-gallon dials are standard, but dials graduated in 5-gallon multiples recording up to 100-gallons can be furnished at extra cost, when desired and ordered.

Nozzle Control—Continuous Flow

The discharge of gasoline is controlled by a quick-acting, smooth-operating, nozzle of improved design. Attendants appreciate the smooth, positive, simple action afforded by this nozzle due to its ease of control under all serving conditions.

Locking Mechanism

When it is desired to lock the pump, the nozzle tip is inserted in the port hole and the nozzle guard and trigger are placed behind the horizontal lug on the hanger, which is rigidly attached to the housing. A padlock is then

placed through the lug, preventing removal of the nozzle tip from the port hole, removal of the nozzle body from the hanger, protecting the nozzle trigger against manipulation and preventing switch lever, which controls the starting and stopping of the pump, from being thrown over far enough to start motor and pump—a "four-way" tamper-proof locking mechanism.

Audibility

A clear toned bell automatically rings as each gallon is delivered, giving audible assurance to the customer of the number of gallons delivered.

Rapid Service

The speed of VARLEY SENTRY is more than sufficient to meet the most exacting requirements. Gasoline tanks of even the largest size can be filled in short time with this fast-serving outfit.

The outstanding service and operating advantages built into Varley Sentry are for the express purpose of enabling marketers to sell more gasoline, render better and faster service as well as build confidence in every transaction with customers.

Simple Installation

All outfits are complete and self-contained and need only to be connected to suction and return lines, and electric circuit to be ready for operation.

Pleasing Architecture

Varley Sentries, both "Single" and "Twin," are designed to be very neat and symmetrical in themselves, presenting an attractive and pleasing appeal. At the same time they are unobtrusive and harmonize with any station design, setting or background. The housings are highly polished and finished in a high grade of red lacquer, or in the customer's colors, if so ordered, and then at nominal charge according to design.

Improved Illumination

By an ingenious yet simple arrangement of one 50-watt light bulb and two reflectors, both dials and the globe of the pump are brightly

View of the new lighting system.

The effect at night.

illuminated, and a material savings in current consumption is effected over former lighting methods requiring two or more bulbs.

Easy Access to Interior

Of noteworthy importance is the ease with which access is gained to the interior mechanism. The housing consists of four shells, two upper and two lower, held securely in place by eight latches which enable removal of entire housing in a few seconds. Replacement is just as simple and easy.

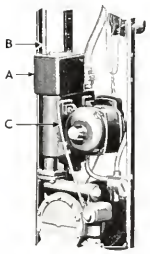
Sturdy Construction

The construction of Varley Sentry is simple, yet exceptionally rugged and compact. The measuring unit, pumping unit and other apparatus are securely mounted in a rigid, structural steel frame, and are not required to sustain any weight. The entire unit is designed and built for a long life of satisfactory service.

Bowser Air Release

Varley Sentry is furnished optionally with air release vented to the storage tank or direct to the atmosphere. While the former method of venting has been tested and proved most economical from a standpoint of preventing gasoline vapor losses, the vent direct to the atmosphere is designed to meet the need where installation of the return line to storage tanl: is deemed impracticable.

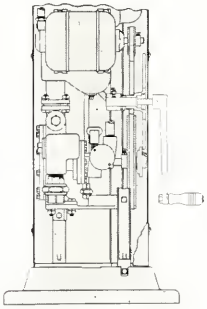
Illustration on Page Seven shows the air release which vents back to the storage tank. Illustration below shows a partial view of the Fig. 418 Varley Sentry interior with air release vented direct to the atmosphere.



As the air separates from the liquid in the air separating chamber (A), it passes off to the atmosphere through vent pipe (B). Vent pipe (B) extends to within $1\frac{1}{2}$" of the top of the dial housing and terminates in a screen cap outside the housing. When the liquid, which accumulates in the air separating chamber, reaches a certain level, a float controlled valve opens and allows the liquid to be withdrawn to the suction side of the pump through pipe (C).

Hand Operating Attachment

A special hand operating attachment of simple, sturdy design (shown in white in illustration) can be furnished for manually operating the outfit should electric current ever fail. This attachment is not furnished standard, and is included (at nominal additional cost) only when ordered.



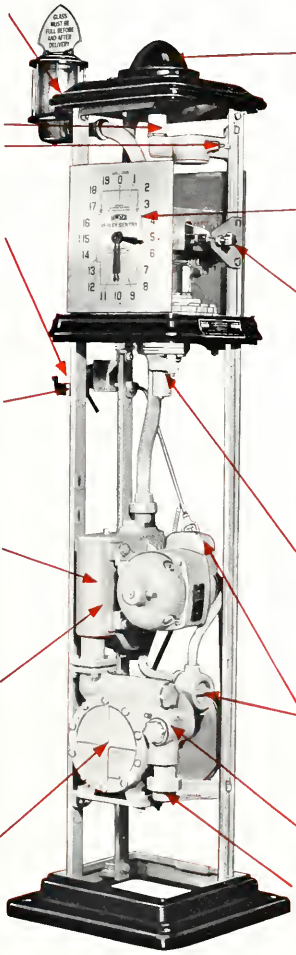
The complete attachment consists of a cast iron bracket, sliding gear, pump pinion and cast iron crank handle with wooden grip. The sliding gear is attached to the cast iron bracket and the pump pinion is fastened permanently to the pump shaft. Should the power be shut off, it is only necessary to insert the crank shaft into the opening provided in the housing — then by applying a slight pressure on the crank handle the sliding gear meshes with the pump pinion, and pumping may begin. Keeping this slight pressure on the crank, towards the pump, holds the gears in mesh. Should the power come on while turning the crank, no injury will result to the operator as the crank is automatically forced out of engagement.

Remote Control Operation

If desired, the Figures 418 and 420 can be furnished for remote control operation. Specifications and prices on remote control units, identified as Figure 418-R and 420-R, will be furnished upon request accompanied by complete requirements.

Inside View of VARLEY SENTRY

Figure 418 "Single"



VISIBILITY of gasoline as it is being served. Noiseless spinner revolves when gasoline is flowing. Top easily removable for cleaning inside of bowl — no litharged joints to break.

ILLUMINATION of both dials and globe is accomplished by one light bulb and two reflectors. Separate switch for light.

POSITIVE CONTROL of pumping operation by control lever which operates vapor-proof switch integral with motor. When control lever is placed across nozzle hanger, pump starts. Pump cannot operate when nozzle is placed on hanger.

FOUR-WAY LOCKING MECHANISM—When nozzle tip is inserted in port hole provided on side of upper housing and nozzle trigger and guard are locked behind lug to nozzle hanger with a padlock, the nozzle and pumping unit cannot be operated.

AIR RELEASE removes any air or vapor in the line, assuring a solid flow of gasoline to the meter; materially helps in making possible the extremely accurate measurement of the Meter.

CHECK AND RELIEF VALVE inside the Air Release keeps the meter and sight glass full of liquid at all times and relieves any excess pressure which may be created above the valve due to expansion of the liquid.

QUIET OPERATION by positive displacement. Practically noiseless. Power-driven by vapor-proof motor through "V" belt. High speed delivery of gasoline by slow-speed operation, insuring maximum efficiency at minimum operating expense. Produces a high vacuum. Primes itself on extremely high lifts.

GLOBE MOUNTING—Permits use of standard 6-inch diameter base display globes. Mountings for special size globes can be supplied at extra cost. If no globe is used, top of pedestal will be provided with an attractive acorn cap at no additional charge, when requested.

VISIBILITY OF MEASUREMENT—Two large rectangular dials accurately indicate the gallonage delivered in each transaction. Large red hand makes one revolution for each gallon. Small hand totals the number of gallons dispensed.

SIDE SET BACK KNOB—Returns dial hands to "0" with one complete backward turn.

GALLONAGE TOTALIZER keeps a continuous record of the gallons dispensed from 1 to 100,000 and repeats. Figures are concealed by shutter which can be raised only by pulling cable extending behind nozzle port hole.

ACCURATE MEASUREMENT—The measuring unit in the Varley Sentry is the long tried and proved Bowser Varley Meter. Dependable accuracy, within strictest legal tolerances, assured with speeds ranging from 5 G.P.M. to full flow.

WIRED COMPLETE ready for connecting to power line. Explosion-proof outlet boxes with double outlet standard. All electrical equipment approved by Underwriters' Laboratories.

CLEAN GASOLINE—Pumping unit is equipped with fine mesh strainer at inlet, thus protecting pump, pump by-pass relief valve and meter from any foreign matter in the gasoline.

QUICK CONNECTIONS—Suction located in corner; easily accessible; ample working room provided.

Specifications

FINISH: Housing, red lacquer; castings, black enamel. Special finish may be had at small additional cost.

CHARACTERISTICS: Self-contained; slow-speed pumping unit; rapid discharge; quiet and smooth operation; fire-proof; sturdy construction; graceful design; economical operation; accurate and dependable measurement.

MEASURING UNIT: Bowser Varley Meter is an all-metal meter guaranteed to measure within tolerances allowed by Weights and Measures laws.

DIALS: Rectangular type; two on each unit; glass covered; indirectly lighted by one 50-watt bulb (bulb not furnished), illuminates both dials and globe; aluminum finish with black lettering and figures; each fitted with two hands; large red hand makes one complete revolution for each gallon discharged; small black hand advances to next gallon graduation as each gallon is discharged; quart graduations indicate less than gallon deliveries; figures run from 1 to 20. (100-gallon dials furnished at extra cost.)

SET-BACK KNOB: Located on side of housing. Returns dial hands to "0" with one complete backward turn; hands cannot be set ahead.

COUNTER: Set in face of one dial on each unit; records to 100,000 gallons and automatically repeats; continuous operation; figures concealed by shutter which can be lifted only by pulling cable extending behind nozzle port hole.

BELL: Automatically rings as each gallon is delivered.

SIGHT GLASS: Indicates that pump is full before delivery; noiseless spinner inside glass revolves when gasoline is flowing. Access to interior for cleaning is easily and quickly gained. There are no litharged joints to break and cause trouble.

HOSE: 9 ft. 6 in. length of 1-inch metal-lined, fabric covered special gasoline hose.

NOZZLE: Fig. 590; self-closing (wet hose type); solid metal tip; trigger-operated throttling valve; approved by Underwriters' Laboratories.

LOCKING ARRANGEMENT: Four-way locking system; nozzle tip, nozzle trigger and nozzle guard interlocked in place by one padlock; switch lever prevented from being engaged, absolutely protecting outfit against unauthorized manipulation.

UNDERWRITERS' LABEL: All pumps bear Underwriters' Label approving outfit for inside or outside use.

AIR RELEASE: Furnished standard for venting back to storage tank or direct to atmosphere. Effectively removes all air from liquid; insures highest efficiency in operation of metering instrument; prevents measuring air as gasoline; absorbs any shock created by closing nozzle at end of hose. When vented back to tank, escape of vapors to atmosphere and resultant liquid loss is prevented. Specify type of Air Release desired, when ordering.

STRAINER: Incorporated in suction side of pumping unit to remove dirt and foreign matter from gasoline; protects pumping unit and meter.

PUMPING UNIT: Positive displacement, high vacuum producing, quiet running type. Screen, outboard bearing and by-pass valve integral with pump; $1\frac{1}{4}$-inch suction; driven by "V" belt; will prime self with exceptionally high suction lifts; drive shaft packed with special Bowser packing which requires very little attention; use of belt drive and provision of outboard bearing integral with pump eliminates any danger of binding due to misalignment. Pumping unit provided with by-pass valve set at 15 pounds.

MOTOR: Outfits standard with $\frac{1}{3}$ H.P. vapor-proof 110-220-volt, single phase, 50 or 60-cycle motor, equipped with starting switch. Can be connected to 2-phase or 3-phase, 60 cycle currents if desired. We can also furnish single phase motors in 25, 30 or 40 cycles or 115 and 230-volt direct current (at additional cost). These latter motors not carried in stock. All orders must specify voltage, phase and cycle required.

ELECTRICAL EQUIPMENT: Switch for starting and stopping motor furnished. Explosion-proof outlet boxes with double outlet furnished standard. Outfits are wired complete, ready for connecting to light and power circuit. Separate switch for light is included standard.

GLOBE MOUNTING: Standard for mounting 6-inch diameter base globes. Special size globe mountings can be furnished at extra cost. If no globe is to be installed, ornamental cap will be provided at no extra cost, when requested.

CHECK VALVE AND RELIEF VALVE: Located in the air release body; keeps the meter and sight glass full of liquid at all times and relieves any excess pressure which may be created above the valve due to expansion of liquid. Spring closing, composition seat.

DIMENSIONS AND WEIGHTS

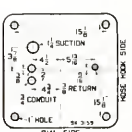
	"Singles"	"Twins"
Height to top of globe clamp	72"	72"
Height to top of ornamental cap	75"	75"
Height to top of Bowser globe	90½"	90½"
Dimensions of housing	12⅝"x13⅝"	31⅞"x12⅝"
Floor space required	18⅜"x18⅝"	36⅞"x18⅜"
Diameter of suction pipe	$1\frac{1}{4}$"	$1\frac{1}{4}$"
Shipping Weights (approx.)	335 lbs.	750 lbs.

EQUIPMENT FURNISHED ONLY WHEN SPECIFIED AND AT EXTRA COST

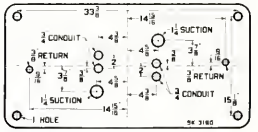
LINE VALVES AND FOOT VALVES: Line valves of single poppet type with bronze seats and poppets; seats removable; for installation in suction pipe above tank. Foot valves of double poppet type with bronze seats and poppets; for installation on lower end of suction pipe inside tank. Tank must have $3\frac{1}{2}$-inch suction flange for foot valve to be installed. (Both line valves and foot valves furnished only at extra cost).

HAND ATTACHMENT: For manually operating outfit should electric current fail. Must be included when pump is ordered. Furnished only when ordered and at extra cost.

Padlocks; Adapters for special size Globes; Lamp Globes; Special Finish; Motors having current characteristics other than standard. 100-gallon Dial.



SINGLE UNIT FOUNDATION PLAN
FIGURE 418



TWIN UNIT FOUNDATION PLAN
FIGURE 420

Note: The air return is not needed when pumps are equipped with inside air releases.

The double conduit is used only when pumps are installed in series. For single pump installations, plug one outlet in conduit box.

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Solvent Purifier

STANDARD FIGURE 665 SOLVENT PURIFIER

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER SOLVENT PURIFIER [FIGURE 665]

THE Bowser Solvent Purifier is a device for batch purifying dry cleaners' solvent by a chemical process. It is manufactured in three sizes, i e., 100, 300, and 500 gallons purified solvent holding capacity. Any of these sizes will handle from three to five loads per day, depending on the condition of the solvent being handled.

It is furnished complete with all of the necessary valves and fittings required for operation. The illustration on the opposite page identifies these various parts.

Operated independently of any other purifying or reclaiming equipment it will completely and efficiently restore the dirty solvent to the same condition as when new. However in cases where other reclamation machinery is in use in the plant the Purifier can be operated in connection with it—giving the same advantages as if it were used independently. It is a valuable addition to the solvent system in any plant not already provided with satisfactory facilities for batch purification.

The operation of the unit is simple. A chemical charge in accordance with the operating instructions is placed in the Purifier.

One charge is sufficient to last for one week under ordinary conditions and need not be removed or replaced until its strength is exhausted.

The dirty solvent is then pumped into the Purifier until it is full. The dirty solvent is thoroughly agitated with the chemical charge for the required period. This agitation of the dirty solvent with the chemical charge results in the saponification of the greases, coagulation of the dirt, and collection of the coloring matter. As a result of this action the impurities in their combined and changed form have sufficient weight so that they readily precipitate out of the solvent. The removal of these impurities restores the solvent to its original state of purity and cleanliness and it can then be returned to the clean storage tank.

A solvent which is purified in the Bowser Solvent Purifier is

Clean—

Because dirt, grease and other foreign matter have been removed.

White—

Because all coloring matter has been removed leaving a clear, crystal solvent the same color as new solvent.

Dry—

Because all traces of moisture from any source are removed.

Sweet—

Because all animal or vegetable matter likely to decompose and cause rancidity, giving the garments an undesirable odor, are removed.

Safe—

Because when properly purified it is free from all traces of chemicals which would be likely to cause damage to garments.

This high quality of solvent is available to all cleaners using the Bowser Solvent Purifier at a very small cost. It has been determined in cleaning plants using these units that the actual cost is about 1/10c a gallon and there is no appreciable loss in the quantity of the solvent purified.

The Bowser Solvent Purifier makes possible better cleaning because it provides a better cleaning solvent. Clothes can be washed faster and require less spotting and special handling.

The Bowser Solvent Purifier insures greater profits for the cleaner using it.

SOLVENT PURIFIER [FIGURE 665]

FIGURE 665
THE BOWSER SOLVENT PURIFIER

1. Gauge Glass
2. Chemical Charging Funnel
3. Upper Sampling Valve
4. Charging Valve
5. Clean Draw-off Valve.
6. Lower Sampling Valve
7. Upper Sludge Draw-off Valve
8. Sight Glass
9. Purified Solvent Return Pipe.
10. Fire Safety Valve.
11. Dirty Solvent Inlet
12. Lower Sludge Draw-off Valve
13. Sludge Discharge
14. Vent Flange.
15. Manhole and Cover

BOWSER SOLVENT PURIFIER [FIGURE 665]

Specifications

CHARACTERISTICS: Chemical process of batch purification. Economical and efficient operation.

CAPACITY: 100, 300 and 500 gallon clean solvent holding capacity.

CONSTRUCTION: 80 gallon of 12 gauge blue annealed steel: 300 and 500 gallon, 3/16" open hearth tank steel. All welded construction.

FITTINGS: Gauge glass, chemical charging valve, upper and lower sampling valves, charging valve, clean draw-off valve, upper and lower sludge draw-off valves, sight glass, fire safety valve, dirty solvent inlet, manhole cover, vent flange and air vent protector.

FINISH: French gray.

DIMENSIONS AND SHIPPING WEIGHTS

Size of Purifier	Height Over All	Diameter	Floor Space Required	Shipping Weight
100-gallon	79"	32"	36" x 36"	340 lbs.
300-gallon	91"	50"	54" x 54"	850 lbs.
500-gallon	97"	56"	60" x 60"	1050 lbs.

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Pony Dry Cleaning System

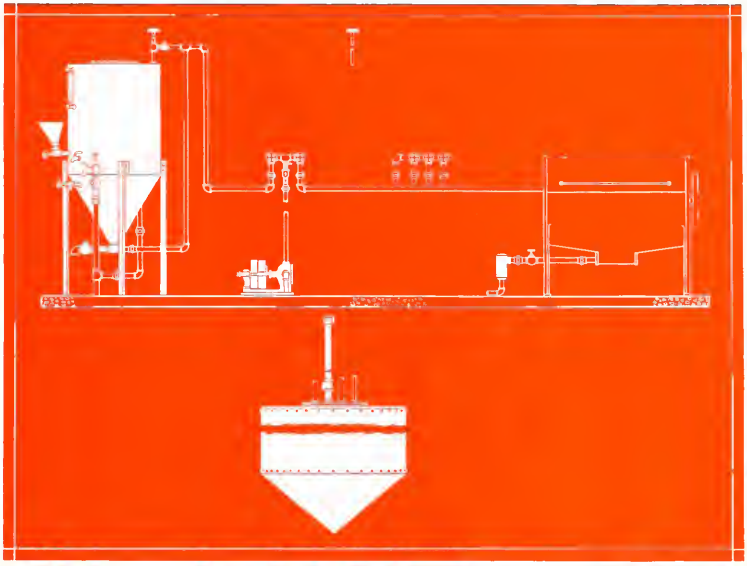


FIGURE 667

A complete system for storage, distribution and batch purification of dry cleaners' solvent

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

Pony Dry Cleaning System

FIGURE 667

The Pony is a complete system for storing, distributing, and batch purifying dry cleaners' solvent.

SIZES AND CAPACITIES

The system is furnished in two standard sizes. The smaller consists of a 120 gallon storage tank, a 100 gallon purifier, a hand-operated pump, a line strainer and air vent protectors. The larger system consists of a 280 gallon storage tank, a 300 gallon purifier, a hand-operated pump, a line strainer and air vent protectors. A power-operated pump can be furnished at small additional cost.

RATINGS

The Pony Systems are designed for the small cleaner doing a business which requires a washing capacity of from 60 to 120 pieces a day. The smaller system permits handling an average of 60 pieces a day, while the larger permits handling an average of 120 pieces a day. These piece ratings are based upon an eight-hour working day and allow sufficient washing time to turn out work of the highest quality. When conditions warrant an increase in working hours or a decrease in washing time, a proportionately greater amount of work can be turned out.

OPERATION

The principle of operation and the design are very simple. Clean solvent is pumped from the storage tank to the washer. From the washer it is pumped to the purifier and an additional supply of clean solvent is drawn from the storage tank. When the purifier has become filled with dirty solvent, the purification process is started. The action which follows brings about a complete purification of the solvent, leaving it free from all dirt, sediment, coloring matter, grease or soap. After this process the solvent is drained to the storage tank, again ready for use.

ADVANTAGES

The Pony System permits using the same body of solvent over and over again in the cleaning process with only a negligible loss in volume and without any loss in quality. It gives the cleaner doing a small business the advantages of having the finest grade of solvent at a nominal cost and enables him to turn out a quality of work equal to that produced by the larger cleaners. The system operates in a logical cycle with no lost time, wasted materials or unnecessary expense. When business increases, the capacity of the Pony System can be increased without discarding any part of the original system. It is only necessary to add a few standard units to convert the Pony into a Junior System (see Figure 666 Bulletin).

PURIFIER

The Bowser Solvent Purifier furnished with the Pony System operates by agitating the dirty solvent with a chemical and then eliminating all dirt and impurities by means of precipitation.

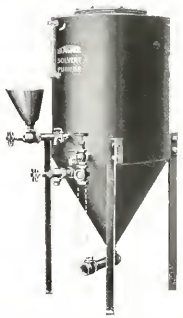


FIGURE 665 SOLVENT PURIFIER

The purifier furnished with the 120 gallon system has a clean solvent holding capacity of 100 gallons. The one furnished with the 280 gallon system has a clean solvent holding capacity of 300 gallons.

The purifier removes grease, dirt (both soluble and insoluble), spent soap, coloring matter and other foreign substances that make the solvent unfit for cleaning purposes. When reclaimed by this process it is as good as new solvent in every respect.

The cost of purification averages only about 1/10c per gallon. This cost has been determined by a careful survey of cleaning plants where Bowser Solvent Purifiers are being used.

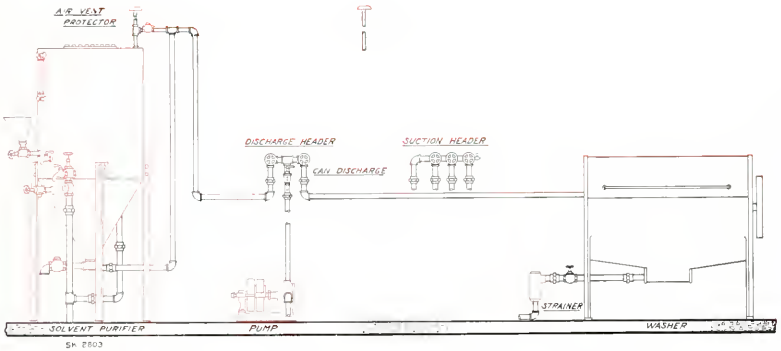
STRAINER

The strainer, with a fine mesh removable screen, catches and retains above ground such articles as buttons, pins, clips, coins, etc., in the dirty solvent coming from the washer. The screen can be easily removed for cleaning. It is furnished with 2 in. openings.

FIGURE 758
STRAINER

Pony Dry Cleaning System

FIGURE 667



Equipment indicated by the red lines is furnished standard with the Figure 667 Pony System, except that a power pump is shown instead of the hand pump.

The equipment shown in black represents the additional parts necessary to complete the system.

TYPE "E" TANK

TANK

The underground storage tank is of the deep cone bottom type. It is constructed of heavy, high-grade, galvanized steel with all seams riveted and soldered inside and outside. It will give many years of leak-proof, satisfactory service.

The manhole ring is riveted and soldered to the top of the tank and the manhole cover is bolted to the ring. A gasket is placed between the ring and cover. This makes a tight, leak-proof, evaporation-proof joint and leaves the inside easily accessible.

Openings for pipe connections to the tank are provided in the cast manhole cover and are properly machined and threaded. All inside piping for the tank, together with fill pipe, cap and lock, are furnished standard.

Pony Dry Cleaning System

FIGURE 667

FIG. 719
HAND PUMP

PUMP

When the machinery is operated by hand, a double acting, hand-operated, piston-type pump is furnished. It is provided with 1 ¼ in. suction and discharge openings. Liquid is discharged on both strokes of the piston.

When power is used to operate the washer and other machinery in the plant, a belt-driven, rotary power pump is furnished at small extra cost.

Both pumps are compact, requiring very little floor space. They are designed especially for the handling of solvent and ruggedly constructed for many years of satisfactory and uninterrupted service.

Specifications

STANDARD EQUIPMENT

The Figure 667 Pony Dry Cleaning System consists of all equipment necessary for storing, distributing and batch purifying dry cleaners' solvent.

The following items make up the standard systems.

120 GALLON SYSTEM

1—120 gallon Type "E" Tank
1—Figure 719 Pump
1—Figure 665 Purifier (100 gallon capacity)
1—Figure 758 Strainer
1—Check Valve
2—Air Vent Protectors.

280 GALLON SYSTEM

1—280 gallon Type "E" Tank
1—Figure 719 Pump
1—Figure 665 Purifier (300 gallon capacity)
1—Figure 758 Strainer
1—Check Valve
2—Air Vent Protectors

STORAGE TANK:

CAPACITY: 120 and 280 gallons

TYPE: "E" cylindrical with deep cone bottom

CONSTRUCTION DETAILS: 14-gauge galvanized steel, single lap seams riveted on 1 in. centers and soldered inside and outside

MANHOLE COVER AND RING: Cast iron ring soldered and riveted to tank top. Cast iron cover bolted to ring through gasket. Threaded openings for outside connections cast into cover.

FITTINGS: All pipe and fittings inside tank are furnished standard and completely installed in tank. Fill pipe, locking cap for fill pipe and air vent protector also furnished standard.

DIMENSIONS (Outside):

	120-gal.	280-gal
Diameter	31 in	39 in
Length of Shell	35 in	54 in
Depth of Cone	16 in	19 in

UNDERWRITERS' LABEL: Tank bears Underwriters label of approval for safe storage of solvent

PUMP, FIGURE 719:

TYPE: Hand-operated, double acting, single cylinder, oscillating motion, easy operating

CONSTRUCTION DETAILS: Cylinder seamless and removable, plunger of spring and leather type, ball valves of special construction.

SIZE: 1¼ in suction and discharge openings. Floor space required, 10 in x 15 in.

SOLVENT PURIFIER, FIGURE 665:

TYPE: Cylindrical with cone bottom.

CONSTRUCTION DETAILS: Material, 12-gauge blue annealed steel on 100 gallon size, ¼ in. open hearth steel on 300 gallon size. Seams welded to the thickness of metal used. Mounted on supporting legs which hold it a sufficient height off floor to permit making pipe connections.

FITTINGS: All necessary valves, sight glasses, gauge, air vent protector, etc., furnished standard. *(For complete information see Bulletin Figure 665).*

STRAINER, FIGURE 758:

CONSTRUCTION DETAILS: Body of cast iron, screw cap of brass, screen of fine mesh material.

SIZE: 2 in. inlet and outlet.

EQUIPMENT FURNISHED AT EXTRA COST

POWER DRIVEN PUMP, FIGURE 1708:

Rotary type, belt-driven, power pump for use in plants where power is available for operating machinery. *(See Figure 1708 Bulletin for complete information).*

SUCTION AND DISCHARGE HEADERS:

Valves, nipples, unions, air valve and all other fittings necessary, completely assembled in unit.

FILL BOX, FIGURE 175:

For protecting fill caps when tanks are installed under floors, sidewalks or pavements. Constructed of malleable iron and fitted with removable cover which is securely fastened by means of hexagon head screw. Suitable wrench furnished to facilitate removal of cover.

PIPE AND FITTINGS:

Necessary pipe and fittings for installing system

SHIPPING WEIGHTS OF COMPLETE SYSTEMS (Approximate):

120 Gallon System	1050 lbs
280 Gallon System	1350 lbs.

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Dry Cleaning Accessories

MASTER TRAP

The Figure 690 Master Trap is recommended for installation in the return line from each washer for the purpose of guarding against the possibility of pins, buttons, dirt and other foreign particles entering the circulating pump. This trap has a large holding capacity making it unnecessary to clean often. It is provided with a removable perforated sheet steel plate and tray from which all the trapped sediment, etc., may be easily removed. The trap shell is made of sheet steel of welded construction with a heavy bar ring welded at the top. The flat cover is secured by means of four hinged, quick-opening clamps which are held in place by thumb screws. A heavy gasket insures a tight cover seal. Fig. 690 is built in 1½" and 2" sizes. The 1½" size is for use with washers ranging in size from 36" x 54" to 42" x 64" inclusive. The 2" size is for use with washers ranging in size from 48" x 54" to 48" x 120" inclusive. The 1½" size is 10" in diameter and 30" high, with 2" inlet and 1½" outlet openings. The 2" size is 10" in diameter and 36" high with 3" inlet and 2" outlet openings. Shipping weights are approximately 70 and 85 lbs.

Figure 690

WASHER TRAP

The Figure 253-B Washer Trap is recommended for use with Bowser Figure 673 Pressure Filters for installation in the return line from each washer to prevent the possibility of buttons and other foreign particles entering the circulating pump. It is provided with a removable basket screen, cleaning of which is easily and quickly accomplished as the cover of the trap is held in place by a yoke with a single hand-operated screw. The trap and cover are constructed of cast iron. The cover is carefully machined and furnished with gasket to insure a tight seal. It is 7" in diameter and 10" high. Inlet and outlet openings are 2". Shipping weight is approximately 16 lbs.

Figure 253-B

SOLVENT HEATER

The Solvent Heater is designed to heat solvent to a temperature of 75° to 90° F., which is most efficient for operation of the system, handling and cleaning results. The heater is of the tubular type, steam being applied to the outside of the tube through which the cold solvent passes. It is manually operated and furnished with thermometer to indicate when the desired temperature is reached. Installation should be made between the pump and filter. Cut shows the Figure 687-A furnished with vertical thermometer and made in the 1¼" size only, as furnished standard with Bowser Figure 673 Pressure Fil-

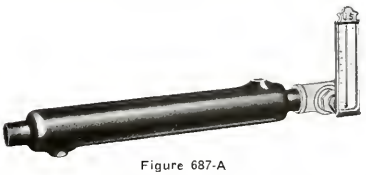

Figure 687-A

ters. When furnished with dial type thermometer, in the 2" size (for use with Bowser Figure 674 Pressure Filters) the Heater is identified as Figure 687. The 1 1/4" size is 3" in diameter and 22" in length with 1 1/2" solvent inlet and outlet connections and 1/2" steam connections. The 2" size is 4 1/2" in diameter and 29" in length with 2" solvent inlet and outlet connections and 1/2" steam openings. Approximate shipping weights are 20 and 50 pounds, respectively.

SIGHT GLASS


Figure 688

Bowser Figure 688 Sight Glasses are of the clear vision type for use at various points in solvent lines to indicate the condition and flow of solvent at all times during the various operations. The body is made of a strong one-piece casting so that the glasses cannot be damaged in making installation. The glasses are fitted into machined recesses and held in place by a machined ring nickel-plated and polished and secured by means of cap screws. Figure 688 is made in the 1", 1 1/4", 1 1/2", 2" and 2 1/2" sizes. Shipping weights are approximately 6 to 10 lbs.

POWER PUMP

The Figure 739 Power Pump is of the rotary type, belt-driven, and with by-pass relief valve built into the head of the pump. It is furnished standard with tight and loose pulleys, belt shifter, etc. It is durably constructed—substantially mounted on a cast iron base. This pump requires minimum current, and with ordinary care will render uninterrupted, efficient service for many years.

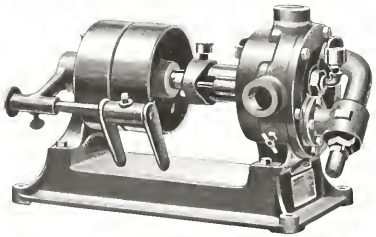
Figure 739

It is unsurpassed as a feed pump, transfer pump and for general utility service for the handling of solvent in the cleaning plant. The Figure 739 is built in a variety of sizes—1 1/4", 1 1/2", and 2" to meet individual plant needs. Where a line shaft is not available, a power-operated pump of direct-drive, explosion-proof type can be furnished.

CHECK VALVE


Figure 780

The Figure 780 Check Valve is designed for use with the Bowser Figure 674 Pressure Filter Systems for the purpose of assuring a full flow of solvent to the washers at all times. It is installed in the main solvent feed line between the last washer and the pump and should be located as near as possible to the take-off line for the last washer in the hook-up. It consists of a brass body with composition valve disc. The valve is actuated by a spring that releases under 5 pounds pressure. This in turn causes the valve to open and allows the solvent to pass through, and stops it instantly when this pressure is relieved. It is made in 1 1/2" and 2" sizes, shipping weights of which are approximately 15 lbs.

CLEANING TOOLS

Cleaning tools, consisting of a suitable brush and hoe, furnished with Bowser Pressure Filters, enable the cleaner to thoroughly brush and clean the exterior walls of the filtering elements and remove the dirt and muck from the sump of the filter. These tools are made in various sizes to meet the needs of all sizes of Bowser Filters.

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FILTERVAC

PRESSURE FILTERS

FIGURE 673

FIGURE 673
BUILT IN 600 G.P.H. and 1000 G.P.H. SIZES

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FORT WAYNE, INDIANA, U. S. A.

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FilterVac Pressure Filters [FIGURE 673]

THE Bowser FilterVac Pressure Filter, Figure 673, is an inexpensive yet highly developed continuous reclamation unit for rapid and efficient removal of all traces of solid and suspended impurities from cleaner's solvent, during the washing operation. It represents a noteworthy addition to the Bowser FilterVac line of solvent filtration, distillation and regeneration processes.

SIZES AND CAPACITIES

Figure 673 is built in two sizes, one having a maximum reclamation capacity of 600 G.P.H., and the other having a maximum capacity of 1000 G.P.H. Each system is furnished complete with pressure filter and by-pass valve, circulating pump, solvent heater and thermometer, washer trap, two sight glasses and cleaning tools.

The 600 G.P.H. System will normally serve any one washer having a cylinder holding capacity up to and including 35 gallons, or two washers within this range if operated alternately. The 1000 G.P.H. System will normally serve any one washer, having a cylinder holding capacity up to and including 60 gallons, or two washers within this range if operated alternately.

For larger size Bowser Filters, giving greater capacities to meet the solvent requirements of any size washer in any size plant, or if simultaneous operation of your washers is desired see Bowser Bulletin, Figure 674.

BOWSER FILTERVAC FILTER ADVANTAGES

With the Bowser FilterVac Pressure Filter, all dirt and grit is continuously filtered out of the solvent as fast as it is removed from the garments. Load after load can be cleaned in the same solvent as filtration is so rapid and thorough that solvent remaining in the washer after each run is remarkably clear and clean, enabling subsequent runs to be made in the same solvent without any further processing or clarification. This continuous, uninterrupted cycle of efficient filtration produces not only a superior quality of cleaning, but effects genuine economies in production. In addition, it reduces solvent storage to a new minimum, cutting the investment in solvent at least 75%.

The Bowser Filter is highly recommended for either the general adaptation of filtering solvents used in cleaning heavy garments or for the reclamation of strong soap solutions used in the cleaning of whites and fancies. It is an all-purpose filtering unit perfectly adapted to varying and exacting plant requirements.

Of major importance is the simple yet positive principle of filtration employed in Bowser FilterVac Filters.

The Figure 673 is equipped with monel metal filtering elements and is so constructed that, by means of backwashing, the need for daily opening the filter and hand brushing the elements, is eliminated. It is only necessary to turn a couple of valves and in less than a minute, the units are ready for renewed operation.

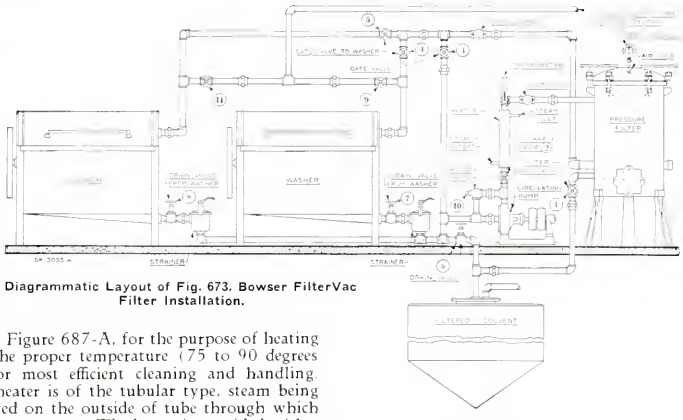
To accommodate the use of the back-wash feature, the monel metal units are reinforced to prevent bulging, and provision is made to hold the units in place when back-wash pressure is applied. Note the illustration below showing monel metal units and manner in which the units are held in position by means of a removable cross-bar. The back-wash feature can only be used with filters equipped with monel metal units.

Top view (cover removed) of the 1000 G.P.H. size Figure 673 showing the monel metal filter units and cross-bar which holds the units in place for the back-washing operation.

Constant high speed filtration at maximum efficiency combined with ease of cleaning and low maintenance cost make the filtering feature of Bowser Filters worthy of serious consideration.

Filtration takes place above ground, making it unnecessary in most cases to install any additional underground tanks when making a Bowser Filter installation. All dirt and muck accumulated in the Filter is retained and easily disposed of above ground and does not get into the underground tanks.

Before reaching the filter, the solvent is passed through a manually-operated solvent



Diagrammatic Layout of Fig. 673, Bowser FilterVac Filter Installation.

heater, Figure 687-A, for the purpose of heating it to the proper temperature (75 to 90 degrees F.) for most efficient cleaning and handling. This heater is of the tubular type, steam being admitted on the outside of tube through which the solvent passes. The heater is provided with a thermometer to indicate temperature of solvent at all times.

A washer trap, Figure 253-B, provided with removable screen basket, is furnished for installation on the outlet line from the washer to prevent the possibility of buttons and other foreign particles entering the circulating pump. Cleaning and removal of basket screen is a simple matter, the cover being held in place by a yoke with a single hand-operated screw.

Intake and return lines are provided with large clear vision sight glasses so that the condition of the solvent going to and coming from the filter may be observed at any time.

There are many other definite, outstanding advantages of Bowser Pressure Filters, chief among which are the following:

Remarkably high speed flow of high quality solvent.

Extremely low initial cost.

Exceptional ease and simplicity of cleaning.

Operates without attention.

Efficiently reclaims strong soap solutions.

Low cost operation.

Cuts cleaning room labor costs.

Reduces washing time—turns out more loads per day.

Increases plant capacity, without additional help.

Reduces water brushing and spotting.

Requires less underground storage.

Uses same solvent over and over again.

Maintains production with only a fraction of solvent formerly required.

Negligible installation expense. All piping above ground.

Operates in connection with present solvent system.

Requires very small floor space.

Filter elements easily and quickly accessible.

Requires minimum amount of filter-aid.

OPERATION

Operation of the Bowser Pressure Filter is extremely simple. Garments to be cleaned are placed in the washer and given a break for a few minutes to loosen up and mix dirt with the filter-aid. After the washer has run a few minutes, the filter is put into operation and the process of filtration starts. Every particle of dirt and solid matter is removed as the solvent passes through the filter elements in the filter, returning solvent to the washer clean and clear. This filtration process continues until the load has cleared up or until the solvent coming from the washer is absolutely clear. As a result, garments are removed from freshly filtered solvent which remains in the washer for cleaning of the next load.

The days operation becomes merely a repetition of the above simple routine with each washer load to be filtered. Thus it is possible to operate a plant with only a few more gallons of solvent than are required to fill the washer.

FilterVac Pressure Filters [FIGURE 673]

ADDING THE FILTER-AID

The filter-aid, which is a porous cellular mineral powder of light weight and high purity, is introduced into the process by dumping a quantity of it into the solvent filled washer. After allowing the washer to revolve for a few minutes the filter-aid is thoroughly mixed with the solvent and the mixture is pumped into the filter. The clear solvent passes through the filtering plate surfaces but the filter-aid adheres to the surfaces. Continuing this process for several minutes completes the "precoating" operation and the filter is then ready for efficient filtration and renewal of soiled solvent.

Instructions for grade and quantity of filter-aid to be used are given in the Bowser Figure 673 Installation Bulletin.

EASE OF CLEANING

Cleaning of the Bowser Filter requires only a few minutes of one man's time. The dirt or cake drops into a sump of large holding capacity below the filtering elements. Pressure is relieved and solvent is drained after which the dirt and grit is easily removed through a quick-opening clean-out door into a clean-out truck for further disposal.

CONSTRUCTION

Bowser FilterVac Pressure Filters are so designed that a large filtering area is available in a comparatively small space. The filter body, top and bottom are substantially constructed of heavy steel with all seams welded. The top is provided with a completely removable cover, held secure by forged swing eye bolts fitted with hand wheels, making it possible to gain access to the filtering elements without the aid of a wrench or other special tool.

The filtering elements, of which there are four in the 600 G P H filter and six in the 1000 G P H size, are of durable metallic construction covered with a specially woven monel gauze. They are mounted vertically inside the filtering chamber and are individually installed for easy removal, cleaning and inspection. Each element is provided with its own outlet which leads into a common manifold connected to the return line to the washer.

The filter is mounted on legs which raise it to a convenient height for cleaning. This feature saves considerable time in the cleaning operation and permits the use of a portable cleanout truck into which the accumulated dirt and muck may be deposited and conveniently removed.

Specifications

STANDARD EQUIPMENT

PRESSURE FILTER

CONSTRUCTION DETAILS: Cylindrical type. Shell made of heavy plate steel. Welded seams. Cover fitted with lifting handles. Supporting legs steel.

DIMENSIONS:	600 G P H	1000 G P H
Floor space required	26" sq.	26" sq.
Diameter of shell	17¼"	17¼"
Overall height	76"	76"
Filtering area, square feet	24	34
SHIPPING WEIGHT: approx.	425 lbs.	475 lbs.

FILTERING ELEMENTS: Triple wire screen plates covered with a specially woven monel metal gauze. Reinforced to permit back-washing without bulging. Units are held down by means of a cross-bar which keeps them in place when the back-wash pressure is applied. 600 G P H size has four units. 1000 G P H size has 6, of varying sizes.

FITTINGS: Cast-iron, nickel-plated, swing hand wheels 6" x 6" clean-out. 2—1¼" inlet connections. 2—2½" outlet connections, one of each being capped. Pressure Gauge. Vent Pipe and Relief Valve pipe extends to edge of filter cover and is equipped with a ¼" angle valve under which a receptacle may be placed to catch the liquid which may be expelled when releasing the air.

FINISH: French gray nickel trim.

CIRCULATING PUMP:

*Figure 1708. 1¼" rotary type belt-driven, tight and loose pulleys 7" diameter x 2½" face. Max. capacity 18 G P M. Floor space required, 10" x 18¾". Shipping weight approx. 150 lbs. May be furnished for direct drive upon application. These pumps are not of BOWSER manufacture and while guaranteed against defective materials and workmanship, their life depends entirely on the amount and nature of the work required of them, and for this reason they cannot be guaranteed against wear.

SOLVENT HEATER:

*Figure 687-A: 1¾" tubular type. Manually-operated Thermometer furnished to indicate solvent temperatures. Diameter, 3"—length overall, 22". Shipping weight, approx., 25 lbs.

WASHER TRAP:

Figure 253-B. Removable basket type 8 mesh wire screen. Quickly removable cover. Shipping weight, approx., 20 lbs. One required for each washer.

SIGHT GLASSES: Two furnished. 1¼" size.

BY-PASS RELIEF VALVE: 1¼" for installation in pump discharge line. Adjusted for maximum filter pressure of 40 lbs.

CLEANING TOOLS: Hoe and brush.

ACCESSORIES FURNISHED AT EXTRA COST

FIRE VALVE: A weighted handle gate valve fitted with fusible link, recommended for installation in the drain line from the Filter instead of a regular gate valve. In the event of fire while the Filter is full of solvent the fusible link on the valve will melt, causing the weighted handle to drop which opens the valve and drains the contents to underground storage.

CENTRIFUGAL CIRCULATING PUMP: Ingersoll-Rand, direct driven by labeled, explosion-proof, 220-440-550 volt, 2 or 3 phase, 60 cycle motor. Prices on motors of other specifications furnished on request.

For complete details on items marked (*) see Accessories Bulletin.

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2000 G.P.H. FIGURE 674
ALSO BUILT IN 3000 G.P.H. AND 5000 G.P.H. SIZES

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DRY CLEANING PRESSURE FILTERS

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FIGURE 674

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

Dry Cleaning Pressure Filters [FIGURE 674]

BOWSER Figure 674 Pressure Filters are highly perfected continuous reclamation units of advanced design for rapid, efficient and economical removal of all traces of solid and suspended impurities from dry cleaner's solvent during the washing operation. The Figure 674 series augments and completes the Bowser Line of Pressure Filters, which comprises a size and capacity to meet exactly the solvent needs of the smallest as well as the largest plants.

Figure 674 is made in three sizes with maximum reclamation capacities of 2000, 3000 and 5000 gallons per hour respectively. Each size is furnished standard with the following accessories: Fig. 780 Check Valve; Fire Valve; Hoe and Brush; Wrench; two Fig. 688 Sight Glasses; Fig. 690 Master Trap; Fig. 687 Solvent Heater with Thermometer; and Fig. 739 Circulating Pump with Relief Valve. For illustrations and complete detailed information on the foregoing see Bowser Dry Cleaning Accessories Bulletin.

AUTOMATIC PRESSURE FILTRATION FOR SIMULTANEOUS WASHER OPERATION

In the past it has been common practice to hook-up two washers to one filter, but both washers could not be operated at the same time. In other words, either one or the other washer was idle for a time. It is a known fact that some loads of garments require longer washing periods than others and this means a delay on one of the washers.

With the Bowser Multiple Hook-up you can operate two or more washers at the same time, on one filter, and have all the solvent needed for all the washers.

When using the Bowser Multiple Hook-up you do not circulate direct from the washer to the filter; instead, the solvent flows from your washer through the safety overflow into the underground tank, which in this system is known as a "circulating" tank. The pump pulls from this circulating tank and introduces the solvent into the filter. From the filter it is forced into the main feed line which extends to as many washers as you may have, say 2, 3 or 4.

The volume of solvent introduced into this line is ample to take care of the simultaneous operation of all washers. There is no hold-up waiting for an individual load to clear.

Should there be a lapse of a few minutes in which all the washers are idle due to the cleaner performing other duties, it is not necessary for him to shut down the system even though the flow is shut off to the individual washers. Instead, the solvent in this system by-passes over the summit overflow and returns to the underground tank (see illustration of Automatic Hook-up on page 5).

This new Bowser Multiple Hook-up is the most flexible ever introduced and will result in large savings in labor, power and materials. It will speed up your cleaning room operations, enabling you to render quicker and better service to your customers. The Bowser Pressure Filter will insure an abundance of remarkably clean, clear solvent at all times.

SIZES AND CAPACITIES
For Simultaneous Washer Operation

Inasmuch as plant conditions and requirements vary considerably, it is impractical to establish a definite schedule of recommended Filter capacities when simultaneous operation of washers is desired. Consequently, we suggest that you supply us with the following infor-

Top view of 2000 G.P.H. Figure 674, with cover swung to a side, showing arrangement of monel metal filter units and cross-bar which holds the units in place for the back-washing operation.

mation which will enable us to accurately determine the exact size Filter needed to satisfactorily handle your plant requirements: Number of washers: Washer holding capacities: Approximate number of loads handled per day in peak season: Approximate number of pieces cleaned per day in peak season.

SIZES AND CAPACITIES

For Alternate Washer Operation

The 2000 G. P. H. size will normally serve any one washer with a cylinder holding capacity up to and including 125 gallons (or washer sizes up to and including 48" x 48") or two washers within this range if operated alternately.

The 3000 G.P.H. size will serve any one washer having a cylinder holding capacity up to and including 144 gallons (or washer sizes up to and including 42" x 72") or two washers within this range if operated alternately.

The 5000 G.P.H. size will normally serve any one washer having a cylinder holding capacity up to and including 314 gallons (or washer sizes up to and including 48" x 120") or two washers within this range if operated alternately.

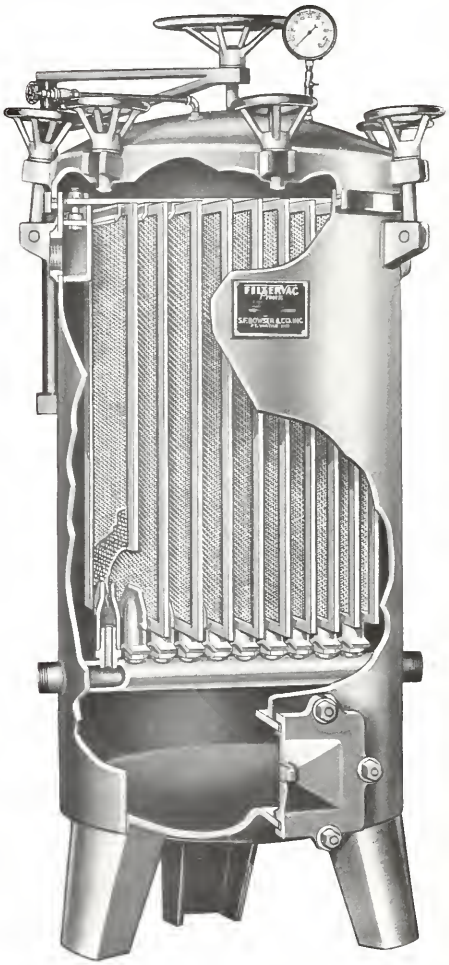
For the smaller size Bowser Filters, with maximum filtering capacities of 600 and 1000 G.P.H., consult Bowser Pressure Filter Bulletin Figure 673.

BOWSER FILTER ADVANTAGES

With Bowser Pressure Filtration, all grit, dirt and other foreign particles are continuously and efficiently filtered out of the solvent as rapidly as it is removed from the garments. By this type of filtration, load after load may be thoroughly cleaned in the same solvent as the process of clarification is so rapid and efficient that the solvent remaining in the washer after each run is remarkably clear and clean. This continuous, uninterrupted cycle of filtration produces not only a superior quality of cleaning, but effects profit-increasing economies in production. In addition, it reduces solvent storage requirements to an absolute minimum, cutting the usual investment in solvent at least 75%.

Of major importance is the simple yet proved and positive principle of filtration employed in Bowser Pressure Filters.

The Figure 674 is equipped with monel metal filtering elements and is so constructed that, by



INSIDE THE BOWSER FILTER

View of the 2000 G.P.H. Size with section of the body broken away to show complete interior construction.

means of backwashing, the need for daily opening the filter and hand brushing the elements, is eliminated. It is only necessary to turn a couple of valves and in less than a minute, the units are ready for renewed operation.

To accommodate the use of the back-wash feature, the monel metal units are reinforced to prevent bulging, and provision is made to hold the units in place when back-wash pressure is applied. Note the illustration on page 2 showing monel metal units and manner in which the units are held in position by means of a removable cross-bar.

Constant high speed filtration at maximum efficiency combined with unusual ease of cleaning and low maintenance cost make the filtering feature of Bowser Filters worthy of careful and serious consideration.

Filtration is accomplished above ground, making it unnecessary in practically all cases to install any additional underground tanks when making a Bowser Filter installation. All dirt and muck accumulated in the Filter is retained and easily disposed of above ground.

Accessibility of filtering elements is another feature of noteworthy importance in Bowser Figure 674 Pressure Filters. Access to the interior of filter body, for inspection and cleaning of filter plates, has been simplified by means of a quickly-removable cover, as shown in illustration. The cover, which is held securely in place by quick-opening hand-wheels, is fitted with a swing arm and hand wheel by means of which the cover is raised and suspended, permitting it to be swung clear of the filter body, making the plates easily and quickly accessible. Two swing arm supports have been provided on the sides of the filter body to accommodate varying installation requirements.

Finished in a delicate shade of gray harmoniously contrasted with nickeled trim and fitted with highly polished nickel-plated hand wheels, Bowser Figure 674 Pressure Filters present a striking appearance on the cleaning room floor of any plant.

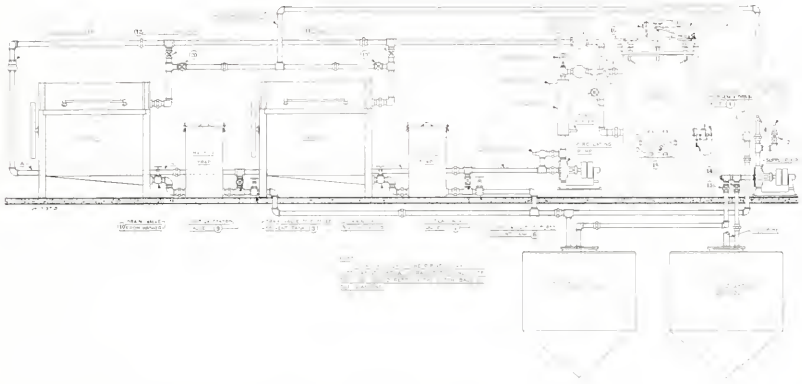
Other distinct and outstanding advantages of Bowser Pressure Filters are as follows:

1. Extremely moderate cost.
2. Low cost operation and up-keep.
3. Reduced cleaning room labor and material costs.
4. Minimized washing time—cleans more loads per day.
5. Increased plant capacity without added help.
6. Reduced water brushing and spotting.
7. Remarkably high speed continuous flow.
8. Produces highest quality solvent constantly.
9. Operates without attention and care.
10. Requires less underground storage facilities.
11. Permits use of same solvent over and over again.
12. Maintains production with only a fraction of solvent formerly required.
13. Simple installation. All piping above ground.
14. Exceptionally easy to clean.
15. Operates in conjunction with present system.
16. Occupies unusually small floor space.
17. Requires minimum quantity of filter-aid.
18. Filter plates readily accessible, quickly removable.
19. Substantially built—all joints leak-proof. No moving parts—nothing to get out of order.

OPERATION

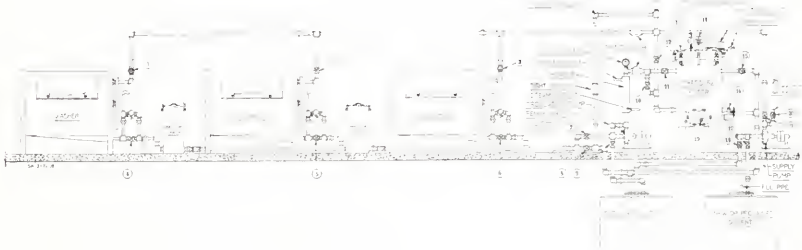
Operation of Bowser Pressure Filters is very simple. Garments to be cleaned are placed in the washer and given a break for a few minutes to loosen and mix dirt with the filter-aid which is a porous cellular mineral powder of light weight and high purity. After the washer has been in operation for a few minutes, the filter is put into operation and the process of filtration starts. During this process, every particle of dirt and solid matter is removed as the solvent passes

Hook-up For Alternate Operation of Two Washers



Above is a diagrammatic illustration of a typical Figure 674 Pressure Filter installation, showing relation of Filter, Circulating Pump, Solvent Heater, Master Traps and Sight Glasses. While the diagram shows all units in a straight line, the various parts obviously, may be located and installed to meet individual plant conditions.

Automatic Hook-up For Simultaneous Operation of Two or More Washers



When simultaneous, instead of alternate, operation of the washers is desired, in plants having two or more washers, the automatic hook-up shown in above diagrammatic layout is recommended.

NOTE: Above illustration also shows the arrangement of piping and valves which accommodates the use of the Bowser Backwash feature, previously described.

through the filtering elements in the filter, returning solvent to the washer clean and clear. This filtration process continues until the load has cleared up or until the solvent coming from the washer is absolutely clear, as indicated by the sight glasses. As a result, garments are removed from freshly filtered solvent which remains in the washer for cleaning of the next load.

The day's operation becomes merely a repetition of the above simple routine with each washer load to be filtered. Thus it is possible to operate a plant with only a few more gallons of solvent than are needed to fill the washer.

ADDING THE FILTER-AID

The filter-aid is introduced into the process by dumping a quantity of it into the solvent filled washer. (See Bowser Fig. 674 Installation-Operation Bulletin for complete details regarding grade and quantity to be used). After allowing the washer to revolve for a few minutes, the filter-aid becomes thoroughly mixed with the solvent and the mixture is then pumped into the filter. The clear solvent passes through the filter-plate surfaces but the filter-aid adheres to the surfaces. Continuing this process for several minutes completes the "precoating" operation and the filter is then ready for efficient filtration and renewal of soiled solvent.

EASE OF CLEANING

The cleaning operation is very simple and requires only a few minutes of one man's time. The dirt or soil laden cake drops into a sump of large holding capacity below the filtering elements. Pressure is relieved and solvent is drained into the storage tank. After the filter has been drained, the dirt and muck may be easily removed through the quick-opening clean-out door.

CONSTRUCTION

Bowser Pressure Filters are so designed that an exceptionally large filtering area is available in a comparatively small space. The filter body, top and bottom are substantially constructed of heavy steel with all seams carefully welded. The dished filter top fits into a grooved recess in the filter body top which is equipped with a heavy, pliable gasket, assuring a tight joint when the top is in position with hand wheels tightened. Clean-out port of ample proportions is fitted with machined door and gasket and bolted to insure a tight seal. Special wrench is furnished for removal of nuts.

The filtering elements are of durable metallic construction covered with a specially woven monel gauze. They are mounted vertically inside the filtering chamber and are individually installed for easy and quick removal, cleaning and inspection. Each element is provided with its own outlet which leads into a common manifold connected to the return line to the washer. Note illustration on page 3.

The filter is mounted on heavy, steel supports which raise it to a convenient height for removal of sludge. This feature effects a material saving in time in the cleaning operation and permits the use of a portable clean-out truck into which the accumulated dirt and muck may be deposited and conveniently removed.

NOTE: To insure maximum filtration and operating efficiency, and to keep soaps in solution, it is necessary to install a solvent heater capable of maintaining a solvent temperature of 75 to 90 F. The heater should be installed between the circulating pump and the Filter.

Specifications

STANDARD EQUIPMENT

PRESSURE FILTER

CONSTRUCTION DETAILS: Cylindrical type Shell, top and bottom made of heavy plate steel Shell seam welded. Bottom, welded to body. Top made leak-proof by means of hand wheels, carefully machined flange and heavy composition gasket fitted in deep filter shell groove. Supporting legs, of which there are three on the 2000 G.P.H. size and four on the 3000 and 5000 G.P.H. sizes, are of steel.

DIMENSIONS	2000 G.P.H.	3000 G.P.H.	5000 G.P.H.
Floor space required	34" sq	38" sq	44" sq
Diameter of shell	21¼"	25⅛"	29⅛"
Overall height	76"	76"	93"
Filtering area, sq. ft.	68	103	134

SHIPPING WEIGHT:
(Approx.) 1000 lbs. 1350 lbs. 1850 lbs.

FILTERING ELEMENTS: Coarse mesh filter plates covered with specially woven monel metal gauze Reinforced to permit back-washing without bulging Units are held down by means of a cross-bar which keeps them in place when the back-wash pressure is applied All sizes contain 10 filtering units of varying dimensions.

FITTINGS: Cast-iron swing hand wheels, nickel-plated and polished. 6 on 2000 G.P.H. size, 7 on 3000 G.P.H. size; 8 on 5000 G.P.H. size. 6" x 10" clean-out (not hinged) on 2000 G.P.H. size. 9" x 11¼" clean-out, fitted with hinged door, on 3000 and 5000 G.P.H. sizes. 2—1½" inlet connections on 2000 G.P.H. and 2—2" on 3000 and 5000 G.P.H. sizes. 2—2½" outlet connections on all sizes. One inlet and one outlet connection capped. Pressure Gauge; Vent Pipe and Relief Valve; pipe extends to edge of filter cover and is equipped with a ¼" angle valve under which a receptacle may be placed to catch the liquid which may be expelled when releasing the air.

FINISH: French Gray, nickel trim.

***SIGHT GLASSES:**
Figure 688: Two furnished Clear vision, double-window type. 1½" for use with 2000 G.P.H. size—2" for use with 3000 and 5000 G.P.H. sizes.

***CHECK VALVE:**
Figure 780: For installation in return line from washers to provide a full flow of solvent to washer at all times. Set at 5 pounds.

FIRE VALVE: A weighted handle gate valve fitted with fusible link, recommended for installation in the drain line from the Filter instead of a regular gate valve In the event of fire while the Filter is full of solvent, the fusible link on the valve will melt, causing the weighted handle to drop which opens the valve and drains the contents to underground storage

***HOE, BRUSH:** Furnished for cleaning plates and Filter sump.

***WRENCH:** Special, for removal of clean-out cover nuts.

***MASTER TRAP:** Figure 690, for installation in the return line from each washer.

***SOLVENT HEATER:** Figure 687, furnished with dial thermometer, for installation in pump discharge line.

CIRCULATING PUMP: Figure 739, for circulation of solvent. Equipped with relief valve, set at 40 pounds, to guard against excessive pressure on filter

ACCESSORIES FURNISHED AT EXTRA COST

CENTRIFUGAL CIRCULATING PUMP: Ingersoll-Rand; direct driven by labeled, explosion-proof, 220-440-550 volt, 2 or 3 phase, 60 cycle motor. Prices on motors of other specifications furnished on request

**For complete information on units marked (*) see Bowser Dry Cleaning Accessories Bulletin and Fig. 739 Bulletin.*

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BOWSER

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Vacuum Still

FIGURE 675

Illustration Shows Full Standard Equipment, Fig. 675 is Built in 100, 150, 250 and 500 G.P.H. Sizes.

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

Vacuum Still [FIGURE 675]

THE Bowser Vacuum Still, Figure 675, is a highly developed, continuous distillation unit for efficient and economical removal of soluble oils, soaps and greases which accumulate in solvent during the cleaning process.

The endless troubles and difficulties which these injurious substances cause in the cleaning plant are well known to the modern cleaner. They are known to seriously affect every cleaning operation, causing delays and difficulties in every department from the cleaning to the finishing rooms. They ruin fine garments and spoil otherwise good workmanship. They are the cause of "rings" and "swails" formed in spotting—and greasy films on finished garment surfaces. They also cause considerable trouble in drying, re-runs and excessive spotting.

With the Bowser Vacuum Still the above disadvantages are entirely eliminated, solvent being restored to its original brilliance and clarity.

The Bowser Vacuum Still has been perfected upon advanced and proved distillation engineering principles which insure the highest degree of efficiency and the maximum in operating economy.

Under ordinary distillation conditions a considerable and costly amount of steam and water would be necessary but by special Bowser features this cost is reduced to a minimum. To bring about vaporization, the solvent, of course, must be heated to its boiling point. Ordinarily this would be at a high temperature but by creating a high vacuum in the Still, the boiling point is reached at a low minimum temperature.

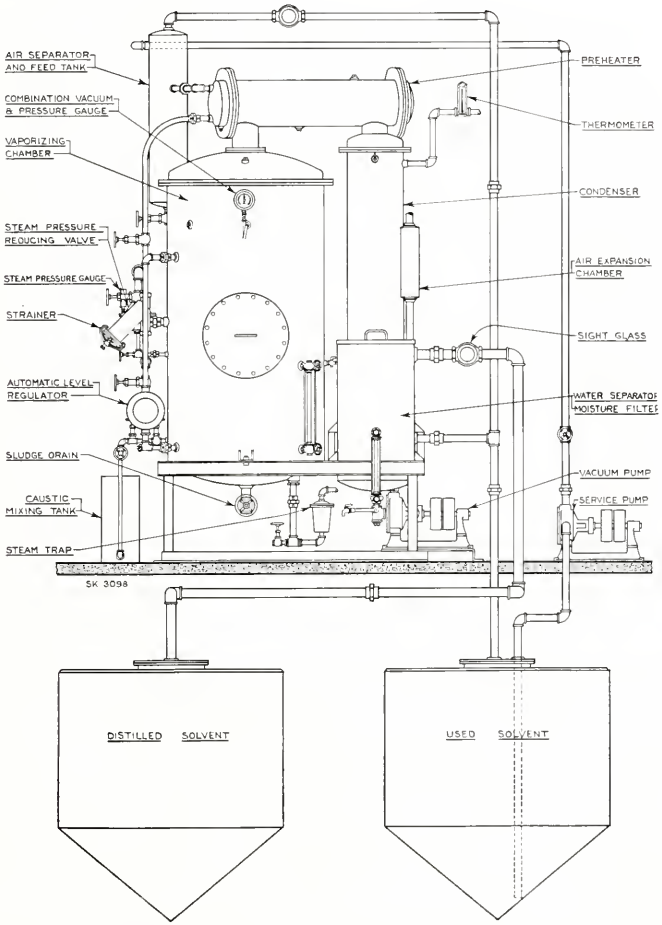
Another means of effecting rapid and economical vaporization in the Bowser Still is by means of a specially designed Preheater through which the hot solvent vapors from the Still pass before entering the condenser. The heat from these vapors is transferred to the incoming solvent making it possible to deliver solvent to the vaporizing chamber at a temperature slightly under the boiling point of the solvent. Preliminary condensation also takes place in the Preheater effecting a real economy in cooling water.

These combined features bring about the utmost in efficiency and economy. They make possible the distillation of solvent at low steam pressures and minimum water consumption. Safety Solvent, for example, can be distilled under a vacuum of 24 to 26 inches of mercury with steam pressures of 25 to 30 pounds, thus reducing the quantity of steam consumed, increasing output and producing a better solvent at lower cost per gallon. The quantity of steam required to evaporate Safety Solvent when operating at steam pressures of 25 to 30 pounds is approximately 1 to 1 1/4 pounds of steam per gallon of solvent distilled. And if the cooling water is delivered to the condenser at 60 degrees F., and at a pressure of 20 to 30 pounds, it will require approximately 1 to 1 1/2 gallons of water per gallon of solvent distilled.

The Bowser Vacuum Still offers many other noteworthy advantages, outstanding among which are the following:

1. Small floor space required—compact design.
2. Extremely simple to operate and install.
3. Rapid, continuous distillation.
4. Rugged, leak-proof construction. Still body virtually one piece of heavy plate steel.
5. No special foundation necessary.

Vacuum Still [FIGURE 675]



Diagrammatic illustration of a Bowser Vacuum Still Installation showing the arrangement of piping, pumps and underground tanks and the various parts which comprise the complete Still.

6. Fully equipped—no extra equipment necessary.
7. Flexible in service—may be used independently or in connection with present clarification system.
8. Completely removes soaps, oils and greases, the boiling points of which are higher than the end point of the solvent itself.
9. Practically no loss of solvent.
10. Easy, quick access to all parts, interior and exterior.
11. No complicated mechanism.
12. Produces high vacuum almost instantly.
13. Maximum vaporization and condensing efficiency.
14. Practically automatic in operation—requires the operator's attention only when starting and for occasional checking of distillate.
15. Automatic, positive control of steam pressure.
16. Automatic, constant control of liquid level in vaporizing chamber.

SIZES AND CAPACITIES

To meet the distillation needs of any sized cleaning plant, Bowser Vacuum Stills are built in four sizes, 100, 150, 250 and 500 gallons per hour. These capacities are calculated on the distillation of Stoddard Safety Solvent which has an initial boiling point of 310 degrees F. and an end point of 410 degrees F. In the distillation of lighter solvents such as Dry Cleaner's Naptha and Benzine which have a lower initial boiling and end point than Safety Solvent, these rated capacities will be considerably increased.

Due to the wide variance in plant conditions, such as: kind of solvent used; volume of business; size and number of washers and storage tanks; boiler capacity; clarification processes used (filters, chemical systems, centrifuge), etc., all of which have an important bearing on distilled solvent needs, it is impracticable for us in these pages, without knowledge of this data, to recommend the proper size Still required to meet individual needs.

INSTALLATION

Installation of the Figure 675 is very simple and inexpensive. No special foundations are required as the complete apparatus is mounted on a rigid structural steel frame. Installation may be made in just a few hours as it is only necessary to connect steam, water and solvent lines and belt-up the pump after which the Still is ready for operation.

CONSTRUCTION

Bowser Vacuum Stills are substantially built to render a long life of uninterrupted, efficient service and are compactly designed to conserve space and afford operator convenience. They are furnished complete with all equipment necessary for operation.

VAPORIZING CHAMBER

The vaporizing chamber, or still body, is constructed of heavy copper bearing plate steel with all seams double electrically welded, with heavy bar rings at the top of sufficient size to insure tight gasket surfaces. Heads are of heavy flanged steel. The bottom head of the vaporizing chamber is dished and flanged and double electrically welded to the Still body. It is provided with a drain valve for the removal of all residue after distillation. It

is also fitted with a large manhole with bolted cover to make inspection and cleaning easy. Baffles are provided inside the vaporizing chamber to prevent entrainment and to trap any liquid before it reaches the vapor outlet. All pipe connections are electrically welded to the Still body.

HEATING ELEMENT

The heating element is of the tubular calandria type and is made of heavy plate steel with all seams double electrically welded. Tubes are of seamless tinned copper and are expanded and rolled into heavy tube sheets at each end. Solvent flows inside of tubes while steam passes around the outside of tubes.

PREHEATER

The preheater is of the multipass type, tubular construction. The shell is constructed of tank steel, electrically welded, with heavy tube sheets at either end into which are expanded and rolled seamless tinned copper tubes arranged in two banks so that solvent travels twice the length of the preheater before entering the vaporizing chamber. One of the heads is fitted with a partition to direct the flow of solvent, and both heads are easily removed for inspection and cleaning.

Genuine economy in both steam and water consumption is effected by the preheater. Solvent passes within the tubes while vapors from the Still pass around the tubes. Thus the vapors are partially condensed by the cold solvent and the cold solvent is preheated to very near the boiling point by these vapors.

CONDENSER

The condenser consists of a steel cylinder fitted on both ends with heavy tube sheets electrically welded to the condenser body into which are expanded and rolled seamless tinned copper tubes of sufficient number to provide ample cooling surface for the condensing and cooling of vapors coming from the Still.

WATER SEPARATOR AND MOISTURE FILTER

The combined water separator and moisture filter is made of copper bearing tank steel of all welded construction. It is provided with a perforated steel partition for supporting the filtering, or absorbing, material which is held in place by another perforated steel plate secured by means of a single threaded rod fitted with a handy wing nut. The inside of this unit is lined with "XXXX" tin to insure cleanliness and prevent rust. The perforated plates are nickle plated. A suitable cover is also provided for the top of the separator.

Solvent vapors pass through the preheater and condenser where they are condensed and cooled back to a liquid. This condensate is then pumped to the combined water separator and moisture filter where water, if any, is separated. As an added precaution solvent is fed through the absorbing material to remove final traces of moisture, before flowing back to the storage tank.

AUTOMATIC LEVEL CONTROL REGULATOR

This unit maintains a constant level of solvent in the Still during the distillation process. It is controlled by a special float and is entirely automatic in operation.

STEAM PRESSURE REDUCING VALVE

This valve maintains a constant steam pressure on the heating element in the

vaporizing chamber irrespective of fluctuations in boiler pressure. It is of the single diaphram type, of rugged, dependable construction and can be readily adjusted by means of the adjusting screw in the top of the valve.

VACUUM AND PRESSURE GAUGES

A combination vacuum and pressure gauge is mounted on the vaporizing chamber to indicate the degree of vacuum under which distillation is being accomplished and to show the amount of pressure in the vaporizing chamber when live steam is being introduced. Another steam pressure gauge on the steam inlet line enables the operator to observe the amount of steam pressure passing to the heating element.

SOLVENT STRAINER

The solvent strainer, of the angular type, fitted with a fine perforated sheet steel screen, guards against the possibility of any loose dirt and other foreign matter passing from the preheater into the automatic level control regulator.

VACUUM PUMP

The vacuum pump is of the rotary type and is the only moving part of the entire assembly. It is mounted securely on a special steel support attached to the main structural steel frame. This pump is furnished standard for belt drive, but may be furnished (at extra cost) with motor drive where line shaft is not available. These pumps are not of BOWSER manufacture, and while guaranteed against defective materials and workmanship, their life depends entirely upon the amount of work required of them, and for this reason they cannot be guaranteed against wear.

STEAM TRAP

The steam trap, of the inverted cup type, is for the purpose of freeing the heating element of all condensed steam, insuring its maximum heating efficiency at all times.

AIR SEPARATOR AND FEED TANK

This unit, of all welded steel construction, is designed to separate and remove any air in the solvent before entering the preheater and vaporizing chamber. It also serves as a reservoir for the collection of any sediment which may be in the solvent and which gravitates to the bottom of the feed tank. In addition it enables the maintenance of a constant head of solvent on the preheater. These functions are accomplished by supplying the feed tank with a flow of solvent which is in excess of the capacity of the Still, the excess solvent being returned to storage.

AIR EXPANSION CHAMBER

This chamber, of welded steel construction, is connected to the discharge of the vacuum pump for the removal of noncondensed air and vapors in the distilled solvent, assuring an undisturbed flow of solvent through the water separator and moisture filter.

CAUSTIC MIXING TANK

The caustic mixing tank is an open top all welded steel container in which caustic and water may be mixed for the purpose of cleaning and sweetening the Still. It is connected to the vaporizing chamber and water supply.

Vacuum Still

[FIGURE 675]

SIGHT GLASSES

Two durably and handsomely designed clear vision sight glasses enable the operator to observe the condition of the solvent passing to and from the Still.

THERMOMETER

A thermometer, placed in the condenser water discharge line, indicates the temperature of the cooling water.

GAUGE GLASSES

A gauge glass is provided at the bottom of the Still to show the level and condition of solvent in the vaporizing chamber. Another glass is attached to the water separator and moisture filter to show the quantity of water in the tank and to indicate when it is necessary to drain through cock provided.

DIMENSIONS AND SHIPPING WEIGHTS

Capacity	Width	Depth	Overall Height	Shipping Weight Lbs. Approx.
100 G.P.H.	6′	3′	8′	1200
150 G.P.H.	6′	3′	8′ 6″	1500
250 G.P.H.	6′ 6″	3′ 6″	10′	1800
500 G.P.H.	8′	4′ 6″	11′	3200

FILTERVAC

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Accessories

The FilterVac Accessories, illustrated and described in this bulletin, are designed to insure maximum efficiency in the operation of Bowser FilterVac Solvent Reclamation Systems. Bowser Bulletins, Figures 671, 672 and 675 describe which of these units are accessory to and standard with FilterVac Pressure Filters and Vacuum Stills.

While these accessories are especially adapted for use with Bowser FilterVac Systems, they may be used with equal facility and efficiency in connection with other solvent reclamation processes.

WASHER TRAP

The Figure 253-A Washer Trap is recommended for use with Bowser Figure 671 Pressure Filters for installation in the return line from each washer to prevent the possibility of buttons and other foreign particles entering the circulating pump. It is provided with a removable basket screen, cleaning of which is easily and quickly accomplished as the cover of the trap is held in

Figure 253-A

place by a yoke with a single hand-operated screw. The trap and cover are constructed of cast iron. The cover is carefully machined and furnished with gasket to insure a tight seal. It is 7" in diameter and 10½" high. Inlet and outlet openings are 2". Shipping weight is approximately 16 lbs.

STRAINER

The Figure 258 Strainer is furnished standard with Bowser Figure 672 Pressure Filters and is installed in the filter drain line to prevent dirt and other foreign matter entering the storage tank when draining filter for cleaning purposes. This strainer is equipped with two screens, one

Figure 258

of intermediate and one of coarse mesh, both of which may be easily removed as access is handily gained by means of a quick-opening cover fitted with winged handle. The body and top of the strainer are constructed of cast iron. The top is carefully machined and furnished with gasket to assure a tight joint. It is 18" high and 14" in diameter. Inlet and outlet openings are of 2" size. Shipping weight is approximately 60 lbs.

BOWSER FILTERVAC ACCESSORIES

SUMP TRAP

The Sump Trap, Figure 358-A, is designed for use in the return line from large washers for the purpose of trapping and retaining above ground, buttons, clips, heavy dirt, etc., when draining the washers. It is provided with three screens, one of fine, one of medium and one of coarse mesh, all of which may be easily removed for cleaning. The trap is made of tank steel and welded and is equipped with quick-removable cast iron cover fitted with gasket to make it leak-proof. It is 20" in diameter and 17½" high. Inlet and outlet openings are of 3" size. Shipping weight is approximately 160 lbs.

Figure 358-A

MASTER TRAP

The Figure 690 Master Trap is recommended for installation in the return line from each washer for the purpose of guarding against the possibility of pins, buttons, dirt and other foreign particles entering the circulating pump. This trap has a large holding capacity making it unnecessary to clean often. It is provided with a removable perforated sheet steel plate and tray from which all the trapped sediment, etc., may be easily removed. The trap shell is made of sheet steel of welded construction with a heavy bar ring welded at the top. The flat cover is secured by means of four hinged, quick-opening clamps which are held in place by thumb screws. A heavy gasket insures a tight cover seal. Fig. 690 is built in 1½" and 2" sizes. The 1½" size is for use with washers ranging in size from 36" x 54" to 42" x 64" inclusive. The 2" size is for use with washers ranging in size from 48" x 54" to 48" x 120" inclusive. The 1½" size is 10" in diameter and 30" high, with 2" inlet and 1½" outlet openings. The 2" size is 10" in diameter and 36" high with 3" inlet and 2" outlet openings. Shipping weights are approximately 70 and 85 lbs.

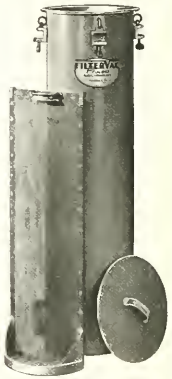


Figure 690

SOLVENT HEATER

Figure 687-A

The Solvent Heater is designed to heat solvent to a temperature of 70° to 75° F., which is most efficient for operation of the system, handling and cleaning results. The heater is of the tubular type, steam being applied to the outside of the tube through which the cold solvent passes. It is manually operated and furnished with thermometer to indicate when the desired temperature is reached. Installation should be made between the pump and filter. Cut shows the Figure 687-A furnished with vertical thermometer and made in the 1¼" size only, as furnished standard with Bowser Figure 671 Pressure Filters. When furnished with dial type thermometer, in the 2" size (for use with Bowser Figure

672 Pressure Filters) the Heater is identified as Figure 687. The 1 1/2" size is 3" in diameter and 22" in length with 1 1/2" solvent inlet and outlet connections and 1/2" steam connections. The 2" size is 4 1/2" in diameter and 29" in length with 2" solvent inlet and outlet connections and 1/2" steam openings. Approximate shipping weights are 20 and 50 pounds, respectively.

SIGHT GLASS

Figure 688

Bowser Figure 688 Sight Glasses are of the clear vision type for use at various points in solvent lines to indicate the condition and flow of solvent at all times during the various operations. The body is made of a strong one-piece casting so that the glasses cannot be damaged in making installation. The glasses are fitted into machined recesses and held in place by a machined ring nickel-plated and polished and secured by means of cap screws. Figure 688 is made in the 1 1/4", 1 1/2", 2" and 2 1/2" sizes. Shipping weights are approximately 6 to 10 lbs.

CLEAN-OUT TRUCK

The Figure 689 Clean-out Truck is especially designed for use with Bowser FilterVac Pressure Filters to facilitate the removal and disposal of soil laden filter cake when cleaning the filter

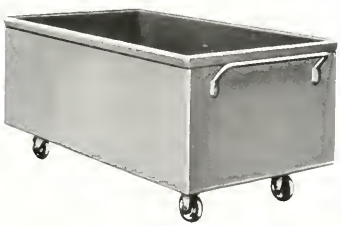


Figure 689

sump. It is constructed of tank steel with seams electrically welded and liquid-tight. Convenient handles are placed at both ends and the truck body is mounted on leather tired ball bearing casters. It is made in the following three sizes with holding capacities large enough to accommodate the needs of the various sizes of Bowser Filters: For 600 and 1000 G.P.H. sizes, truck is 14" high, 11 1/2" wide, 18" long. For 2000 and 3000 G.P.H. sizes, truck is 15" high, 16" wide, 22" long. For 5000 G.P.H. size, truck is 18" high, 21" wide, 36" long. Approximate shipping weights are 45, 75 and 130 lbs., respectively.

POWER PUMP

The Figure 1708 Power Pump is of the rotary type, belt-driven, and is furnished standard with tight and loose pulleys, belt shifter, etc. It is durably constructed—substantially

Figure 1708

mounted on a cast iron base—requires minimum current—and with ordinary care will render uninterrupted, efficient service for many years. It is unsurpassed as a feed pump, transfer pump and for general utility service for the handling of solvent in the cleaning plant. Figure 1708 is built in a variety of sizes—1 1/4", 1 1/2" and 2"—to meet individual plant needs. It does not include a by-pass. For complete details, see Bowser Figure 1708 Bulletin. Where line shaft is not available, power pump of direct-drive, explosion-proof type can be furnished.

FILTERVAC ACCESSORIES

CHECK VALVE

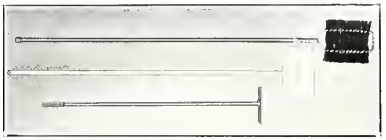
Figure 780

The Figure 780 Check Valve is designed for use with the Bowser Figure 672 Pressure Filter Systems for the purpose of assuring a full flow of solvent to the washers at all times. It is installed in the main solvent feed line between the last washer and the pump and should be located as near as possible to the take-off line for the last washer in the hook-up. It consists of a brass body with composition valve disc. The valve is actuated by a spring that releases under 5 pounds pressure. This in turn causes the valve to open and allows the solvent to pass through, and stops it instantly when this pressure is relieved. It is made in 1 1/2" and 2" sizes, shipping weights of which are approximately 15 lbs.

BY-PASS RELIEF VALVE

A by-pass relief valve is furnished standard with each Bowser FilterVac Pressure Filter, for installation in the pump discharge line, to guard against excessive pressures on the filter. It is adjusted and set to relieve filtering pressures in excess of 40 pounds. It is made in the 1 1/4", 1 1/2" and 2" sizes.

CLEANING TOOLS



The above Cleaning Tools are designed for use with Bowser FilterVac Pressure Filters. The brush and scraper enable the cleaner to thoroughly brush and scrape the exterior walls of the filtering elements and the hoe facilitates the removal of dirt and muck from the sump of the filter. These tools are made in various sizes to meet the needs of all sizes of Bowser Filters. Shipping weights are approximately 10 lbs.

MISCELLANEOUS PARTS

The following miscellaneous items, in addition to others, are furnished standard with Bowser Figure 672 Pressure Filters: 2 quart dipper, and 1 quart graduated measure, for use in handling filter aid; special wrench for removing clean-out door bolts; and gate valve for use between Figure 258 Strainer and Filter. See Figure 672 Bulletin.

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Hand Pump Figure 719

STANDARD FIGURE 719 HAND PUMP

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS SYDNEY

HAND PUMP [FIGURE 719]

Bowser Figure 719 Hand Pump is for handling gasoline, kerosene, naphtha, solvent and other light liquids. The pump is non-measuring.

This pump is of the double acting type (discharges liquid on both strokes) which gives it an exceptionally rapid rate of discharge.

It is very rigidly constructed. No small parts or delicate mechanism to get out of order. Easy operating handle is located at a convenient height.

Figure 719 will give many years of uninterrupted, satisfactory pumping service.

Specifications

FINISH: Black.

CHARACTERISTICS: Piston type, double acting lever handle; oscillating motion; easy operation; non-measuring.

CONSTRUCTION DETAILS:

Pump Cylinder: Cast iron with heavy, seamless, brass tube cylinder liner.

Plunger: Solid, double packed with formed cup leathers especially treated for the liquid being handled.

Valves: Ball valves with especially constructed valve seats.

Packing: Kept tight by spring and gland packing nut, recessed for holding oil.

Base: Steel.

DIMENSIONS AND SHIPPING WEIGHT	
Height over all	48″
Width over all	15″
Floor space required	10 1/4″ x 15″
Shipping weight, approximate	120 lbs.

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Pipe Line Strainer

FIGURE 730

The Bowser Figure 730 Pipe Line Strainer is designed for the purpose of preventing dirt, pipe scale and other foreign particles, which may be in liquid, from entering metering devices, and which unless removed would result in damage, inaccuracy and decreased efficiency. It is also adapted for use in removing dirt and other foreign matter from dry cleaner's solvent, preventing damage to circulating pumps, etc.

1½" Figure 730

Application of the Figure 730 is not confined to any particular liquid or service. It is designed to handle gasoline, kerosene and similar light liquids as well as lubricating oils, fuel oils, paint oils and liquids of like characteristics. It is highly recommended for use in all types of installations where an efficient straining device must be used. By virtue of its advanced design, a minimum flow restriction and maximum screening area are provided.

The Figure 730 is made in a variety of sizes, ranging from ¾" to 8" (see table below) to meet all service requirements.

The Figure 730 is equipped with removable basket screen enclosed in a heavy galvanized wire supporting frame fitted with bail. Access to screen for cleaning is gained by removing the cover bolts. The cover is machined and furnished with gasket to insure a tight seal and is provided with a plugged pipe opening to facilitate installation of a pressure gauge or vent valve.

When used for the handling of gasoline and similar liquids, the Figure 730 is furnished with a 90 mesh, non-corrosive, rust-resisting monel metal screen. When used in connection with lubricating oils and like liquids, a screen of suitable material and mesh will be furnished, depending upon the liquid to be handled and the service requirements.

The 1½" size is furnished with screwed con-
The ¾", 1¼" and 1½" sizes are furnished with screwed connections and constructed of cast iron only. The 2" size is equipped with screwed connections and is built in cast iron and aluminum. The 2½" size is of the same body size as the 3" but is fitted with 2½" companion flanges and is made in cast iron and aluminum. The 3" size is equipped with 3" companion flanges and is also constructed of both cast iron and aluminum. The 4", 6" and 8" sizes are fitted with companion flanges and constructed of cast iron only.

SPECIFICATIONS

Size Inches	Overall Width Inches	Overall Height Inches	Shipping Weight Lbs. (Approx.)	
			Cast-iron	Aluminum
¾	3 3/16	8 1/8		
1¼	3 7/16	8 3/8		
1½	6	9 5/8	16	
2	7	11	24	12
2½	11 1/16	11	55	20
3	11 7/16	13 1/2	60	25
4	20	20 1/4	220	
6	26 1/2	33		
8	26 1/2	33		

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Air Chamber and Air Release Figure 749

Figure 749 Combination Air Chamber and Air Release

The Figure 749 is a combination air chamber and air release, designed for separating and releasing air from liquid following through a pipe line to a metering device to insure accuracy in measurement.

This unit is especially made for use where the volume of air in the liquid or lines is greater than the capacity of the Bowser Figure 753-C Air Release which is suitable in most installations.

Figure 749 is made in six standard pipe line sizes—2", 3", 4", 6", 8" and 10". The construction of the entire unit is very substantial and there are no delicate parts of intricate mechanism to wear or get out of order easily. All parts are made of materials which will not affect or be affected by the liquid to be handled.

Complete instructions for installing and operating are given in the Figure 749 Installation-Operation-Parts List Bulletin.

DIMENSIONS AND SHIPPING WEIGHTS

Size Inches	Height Overall Inches	Width Overall Inches	Shipping Wt Lbs Approx
2	56 1/2	28 1/2	650
3	68 1/2	28 1/2	800
4	68 1/2	29 1/4	800
6	81 1/2	37	1450
8	110	44	2000
10	110	44	2000

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Registering Measure

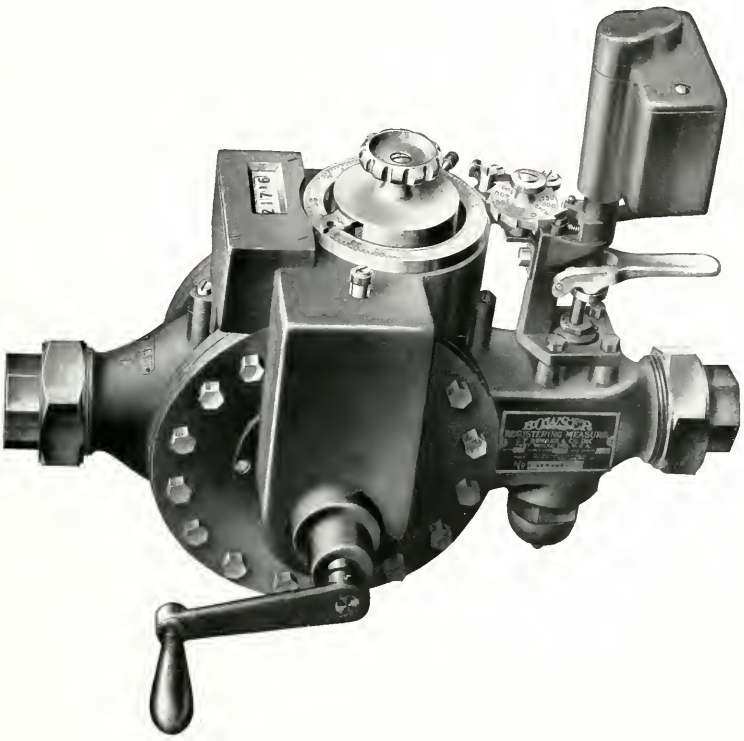


FIGURE 752 REGISTERING MEASURE

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER REGISTERING MEASURE [FIGURE 752]

THE Figure 752 Registering Measure is a device for accurately measuring, registering and discharging pre determined quantities of petroleum, animal and vegetable oils, gasoline, asphalt and many other commercial liquids.

The device consists of a registering measure equipped with mechanism for accurately measuring pre-determined quantities and for automatically controlling the pumping unit

CONSTRUCTION

The measure is constructed throughout of metals best adapted to the liquids to be handled. For gasoline, and liquids of a similar nature, the bronze registering measure should be used while for kerosene, lubricating oils and similar liquids the cast iron measure should be used. It is required in all cases where there is any doubt as to the capability of the measure to handle certain liquids that a sample of the liquid and full details regarding the proposed installation be submitted for analysis and consideration by our Engineering Department.

Either of two sets of dials may be provided with the measure. The one set is for use in designating quantities from 1 to 250 gallons and the other for quantities from 1 to 1,000 gallons. The dials are constructed of heavy brass with figures plainly indicated.

The registering mechanism or counter is carefully constructed, the bearings and all parts subjected to the greatest wear being of hardened material. This measure consists of the smallest number of working parts consistent to employ in advanced registering measure construction. Each part is not only carefully machined but is finished by hand, thus assuring a perfect assembly and consequently the nearest approach to perfect accuracy possible to attain in a mechanical device of like nature.

The Remote Control Switch by means of which the pumping unit is controlled is of an improved type and fully inclosed. It is permanently attached to the measure and operates in connection with the lever which also controls the flow of liquid.

After assembly, but before completion, each registering measure is thoroughly tested and the gears of the meter device calibrated under actual working conditions. After calibration the registering measure complete is again tested for accuracy.

OPERATION

The measure is operated by pump pressure. It may be installed at any desired point of discharge, the pump or pumps being located at any convenient and practical place and may be driven by either a belt or direct connected motor.

To place the meter in operation the dial is first set for the desired quantity. A flow of liquid is then started through it by simply pressing the control lever. This opens the discharge valve and at the same time closes the electric circuit which starts the motor and pump. When the quantity, for which the dial has been set, has been discharged the valve automatically closes simultaneously breaking the electric circuit and stopping the motor.

By means of a special quantity stop the dial may be immediately reset for the same quantity by simply revolving the dial until the indicator reaches the stop. This operation can be repeated indefinitely, it being necessary to read the figures only at the time the dial and quantity stop are originally set. The value of the feature just described can be readily recognized where a number of barrels, vats or other receptacles are to receive the same quantity of liquid. The counter maintains a continuous record of all liquid passed through the measure regardless of the manipulation of the pre-determined mechanism.

APPLICATION

The Bowser Figure 752 Registering Measure has a wide range of application. It can be used in practically any place where it is necessary or desirable to measure pre-determined quantities of liquid either into barrels, mixing vats or other containers.

When used for barreling purposes, one man handles the entire operation. While one barrel is being filled he is enabled to plug and prepare for shipment the barrel just filled and place empty barrels in position for filling. The labor savings effected can be readily recognized.

Accessories

FIGURE 753-C AIR CHAMBER AND AIR RELEASE

The Figure 753-C Air Chamber and Air Release is a device especially designed for separating and releasing air from liquid flowing through a pipe line, and for absorbing impact pressures or shocks which may be present in a pipe line.

Figure 753-C
Air Release

This equipment is especially adapted for use where conditions require a solid flow of liquid only, as when being delivered to a registering measure, where the presence of air will affect the accuracy of the measurement. It must be used in all installations where the liquid is supplied to the measuring device by either pump or air pressure.

The Figure 753-C is manufactured in three standard pipe line sizes—1 1/2 in., 2 in., and 3 in. When smaller sizes are required the 1 1/2 in. size will be furnished with the necessary bushings.

The construction of the entire unit is very substantial, with no delicate parts of intricate mechanism to wear or get out of order. The design is very simple. All parts are of materials which will not affect, or be affected by, the liquid to be handled.

BY-PASS

This device consists of piping and valves so arranged that when desirable the liquid may be discharged through the pipe line without its passing through the measure.

SELF STARTER

Inasmuch as all Remote Control Registering Measure installations require the use of a reliable self starter, we are prepared to supply the proper type and size at a reasonable additional cost.

FIGURE 730

Figure 730

Figure 730 Strainer is designed for use with gasoline, oil and similar light liquids. Its advanced design is such that a minimum flow restriction and maximum screening area are provided. It is equipped with monel metal screen. The 1 1/2" size is constructed of cast iron only and the four larger sizes are built of cast iron and aluminum. The 1 1/2" and 2" sizes are equipped with screwed connections and the 2 1/2", 3" and 4" sizes are fitted with companion flanges.

STEAM JACKET

When the measure is used for heavy fuel oil or other liquids which do not flow freely in cold weather, it is sometimes desirable to equip it with a Steam Jacket. This can be furnished for pressure up to 125 pounds at a reasonable charge.

TRANSFORMER

When the electric power circuit exceeds 220 volts it is necessary to reduce that part of the current going through the Remote Control Valve to 110 or 220 volts.

This can be accomplished by means of a sign transformer which will reduce the 450 or 550 volts to 220 volts.

BOWSER REGISTERING MEASURE [FIGURE 752]

Specifications

STANDARD EQUIPMENT

The Figure 752 Registering Measure is a complete measuring and recording device equipped with mechanism for accurately dispensing pre-determined quantities of liquid and for simultaneously stopping and starting the pumping unit.

CONSTRUCTION: Constructed throughout of best materials carefully machined and assembled, thoroughly tested for accuracy under actual working conditions.

CHARACTERISTICS: Bronze measure designed for use with gasoline, and similar liquids and cast iron measure for kerosene, lubricating oils, fuel oils, etc. measure may be subjected to a maximum pressure of 75 pounds.

DIALS: 1 inch measure regularly equipped with 250 gallon dials (1000 gallon furnished if specified at no extra cost). $1\frac{1}{2}$, 2 and 3 inch measures regularly equipped with 1000 gallon dial. Dials are constructed of heavy brass with figures deeply etched.

COUNTER: Thoroughly tested for accuracy, records to 100,000 gallons and repeats.

PRE-DETERMINED AND REMOTE CONTROL MECHANISM: This attachment consists of dial for specifying the pre-determined quantity, a lever for placing the mechanism in operation and a switch for controlling the pumping unit.

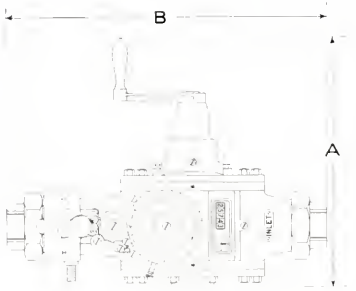
END CONNECTIONS: Union connections are furnished same size as inlet and outlet openings except on the 1-inch meter which is supplied with $1\frac{1}{4}$-inch unions. The 3-inch meter is fitted with flanged unions, faced and drilled per A. S. M. E. specifications.

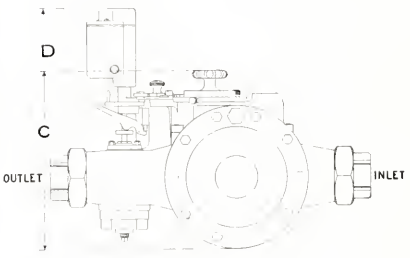
OPERATION: Operated by pump pressure only.

FINISH: Red enamel when used for gasoline, naptha or other volatile liquids; black enamel for other liquids.

EQUIPMENT FURNISHED AT EXTRA COST

See items illustrated and described on previous page.





GENERAL SPECIFICATIONS

SIZE	OUTSIDE DIMENSIONS A	B	C D	MAXIMUM G. P. M. Cast Iron	Bronze	MINIMUM G. P. M. (Cast Iron and Bronze)	SHIPPING WEIGHT, LBS. (Approximate)
1"	$10\frac{3}{4}$"	$15\frac{1}{2}$"	$11\frac{3}{4}$"	16	13	$1\frac{1}{2}$	50
$1\frac{1}{2}$"	$12\frac{1}{2}$"	$18\frac{1}{2}$"	$14\frac{1}{2}$"	37	30	4	135
2"	$14\frac{1}{4}$"	$18\frac{1}{2}$"	$13\frac{1}{2}$"	60	50	"	225
*3	16"	23"	$18\frac{1}{4}$"	136	108	15	275

*Standard with base cast on body

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Air Chamber and Air Release Figure 753-C

FIGURE 753-C
Made in 1 1/2", 2" and 3" Pipe Sizes

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TORONTO LONDON BERLIN PARIS ROTTERDAM

Air Chamber and Air Release

FIGURE 753-C

The Figure 753-C Air Chamber and Air Release is a device especially designed for separating and releasing air from liquid flowing through a pipe line, and for absorbing impact pressures or shocks which may be present in a pipe line.

This equipment is especially adapted for use where conditions require a solid flow of liquid only, as when being delivered to a metering device, where the presence of air will affect the accuracy of the measurement. It must be used in all installations where the liquid is supplied to the measuring device by either pump or air pressure.

The Figure 753-C is manufactured in three standard pipe line sizes—1 1/2 in., 2 in., and 3 in. When smaller sizes are required the 1 1/2 in. size will be furnished with the necessary bushings.

The construction of the entire unit is very substantial, with no delicate parts of intricate mechanism to wear or get out of order. The design is very simple. All parts are of materials which will not affect, or be affected by, the liquid to be handled. The valve body is made of bronze and the poppet of cast bronze to prevent the possibility of corrosion.

OPERATION

As the liquid enters the Air Chamber and Air Release it passes into an inner cylinder (the area of which is much greater than the area of the inlet to the air chamber and air release) where the velocity of the flow is greatly reduced allowing a greater interval of time for the air to separate from the liquid. The air, being lighter than the liquid, rises to the top of the air release, into the air chamber where a quantity of it is constantly maintained to absorb impact pressures or shocks which may occur in the lines. As the air continues to accumulate and periodically exceeds the capacity of the air chamber, the pressure of the excess air lowers the liquid level to a given point causing the float to drop which in turn opens the vent valve and allows the accumulated excess air to escape.

For complete operating and installation instructions, refer to Figure 753-C Installation Bulletin.

DIMENSIONS AND SHIPPING WEIGHTS

Size (Inlet and Outlet)	Height Over All Inches	Width Over All Inches	Shipping Weight Pounds (Approx.)
1 1/2"	43 3/4	13 3/4	160
2"	56 3/4	18 1/2	305
3"	56 3/4	19 1/2	310

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REGISTERING MEASURE

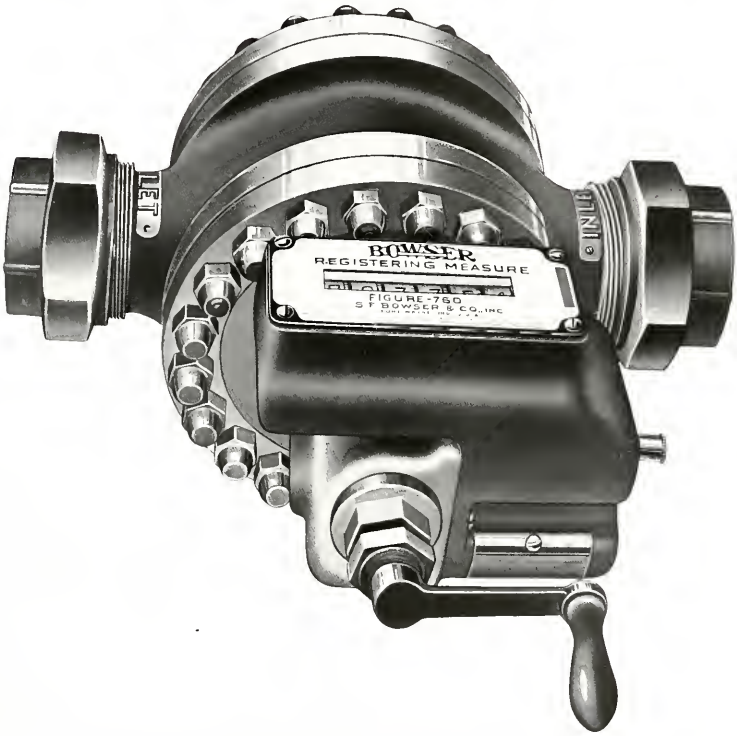

FIGURE 760 REGISTERING MEASURE, WITH UNION CONNECTIONS

Illustration Shows Right Hand Measure (Inlet on Right Side, When Facing Counter or Crank Handle, as Above). Measure Can be Supplied with Inlet on Left Hand Side, if Desired, and Specified.

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BOWSER REGISTERING MEASURE [FIGURE 760]

THE Bowser Figure 760 Registering Measure is a complete device for accurately measuring and recording the amount of liquid flowing through a pipe line. It is especially applicable for use where high pressures and high temperatures are encountered.

In order to satisfactorily meet a wide and varied range of applications the Figure 760 Registering Measures are built in nine pipe line sizes, from ¾ to 10 inch with capacities ranging from 1 to 1500 G.P.M., and may be furnished in either bronze or cast iron construction.

The measures constructed of bronze are designed for use in handling gasoline, benzine and liquids of similar characteristics. The measures of cast iron construction are designed for the handling of such liquids as lubricating oils, fuel oils, paint oils, etc. And where there is any doubt as to the capability of the measure to handle certain liquids, complete details with sample of liquid should be submitted to our Engineering Division for their consideration and analysis. The Figure 760 is not recommended for the handling of water.

The Figure 760 is built in the following sizes: ¾, 1, 1½, 2, 3, 4, 6, 8 and 10 inch. The measures from ¾ to 4 inch, inclusive, will withstand a maximum working pressure of 300 pounds. The 6, 8 and 10 inch measures will withstand a maximum working pressure of 75 pounds. The 3 inch and larger sizes are standard with flange connections—smaller than 3 inch are standard with union connections.

The registering mechanism of the Figure 760 is carefully and substantially constructed. The ¾ to 3 inch sizes inclusive register to 1,000,000 gallons and repeat automatically. The 4 to 10 inch sizes inclusive register in 10 gallon units to 10,000,000 gallons and repeat automatically. All bearings and parts subjected to greatest wear are of hardened materials. The smallest number of working parts consistent in any assembly of this kind are used. Each part is not only carefully machined but finished by hand to insure a perfect assembly, and a long term of satisfactory operation.

After being assembled, each Registering Measure is thoroughly tested and the gears of the metering device calibrated under actual working conditions. After calibration the Registering Measure is again tested to insure accuracy.

Figure 760 can be operated by either gravity, air or pump pressure. When liquid is delivered to the measure by gravity, however, there must be a gravity head sufficient to produce 5 pounds pressure at inlet to meter to insure satisfactory operation. Operation of the measure and counter mechanism is started simultaneously with the flow of liquid through the pipe line in which it is installed.

The Figure 760 has a wide range of application. It is indispensible wherever an accurate record of the amount of liquid flowing through a pipe line is desired or necessary. It is especially adapted for the handling of hot tar and asphalt. It is frequently used in industrial installations where a central pumping unit supplies liquid to several points of discharge where it is used in mixing and manufacturing processes. In these cases a measure is placed in each line, thus providing a record of consumption by each department or point of discharge, as well as of the total amount used. It is also successfully used for loading or unloading the contents of tank cars, tank steamers, storage tanks and a host of other applications. This measure, in fact, may be used under most any conditions where the range of temperatures, pressures and specifications of liquids is wide and varied.

To enable us to accurately determine correct Registering Measure specifications, complete information relative to installation conditions and requirements should be submitted for consideration and approval.

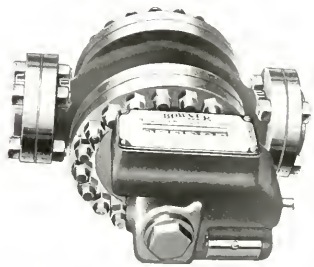


Figure 760 Registering Measure With Flange Connections

Accessories and Variations from Standard Equipment

(Furnished at Extra Cost)

FIGURE 753-B AIR RELEASE

The Figure 753-B Air Release is designed for the purpose of separating and releasing air from liquid flowing through a pipe line. It is essential that this device be used in certain Figure 760 installations where air is present in the lines or liquid, which air unless removed will affect the accuracy of the mechanism.

Figure 753-B

The Air Release should be located in the pipe line as near the Registering Measure as practical, and on the inlet side. The unit is simply but substantially constructed—there are no delicate parts to get out of order. The valve body is constructed of bronze and the poppet is of cast monel metal to prevent corrosion. It requires no attention after installation, except to work the valve in the top, up and down a few times occasionally when the gauge shows a low liquid level, indicating that the air release valve is slightly gummed and not functioning properly. Figure 753-B is furnished in $1\frac{1}{2}$, 2 and 3 inch pipe sizes.

BY-PASS

This device consists of piping and valves so arranged that when desirable the liquid may be discharged through the pipe line without its passing through the measure.

STEAM JACKET

When the measure is used for heavy fuel oil, hot tar, asphalt or other viscous liquids which do not flow freely, it is sometimes desirable to equip it with a Steam Jacket. This can be furnished for steam pressure up to 125 pounds, at a reasonable charge.

FIGURE 755 STRAINER

The Figure 755 Strainer is an essential accessory in every Registering Measure installation and is intended for use with lubricating oils, fuel oils and similar liquids. It removes all dirt, chips, or other foreign matter which might be in the liquid and thus affords protection to the metering device against damage. It is furnished in $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2 and 3 inch sizes.

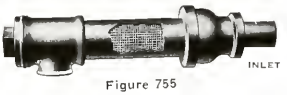


Figure 755

FIG. 730 STRAINER

The Figure 730 Strainer meets the same general requirements as the Figure 755 except that it is intended for use with such lighter liquids as gasoline, benzine, etc. It is furnished in $1\frac{1}{2}$, 2, $2\frac{1}{2}$ and 3 inch sizes.

Note—An approved Strainer is required in all Registering Measure installations. The strainer should be located in the pipe line as near the Registering Measure as practical, and on the inlet side.

FIGURE 850 DOUBLE STRAINER

The Figure 850 Double Strainer is especially designed for use in installations handling liquids which contain a considerable quantity of impurities, thus causing the strainer to require frequent cleaning. Its use permits continuous operation, inasmuch as one strainer is in use while the other is being cleaned. This strainer is applicable for use with such liquids as lubricating oils, fuel oils, paint oils, etc. It is furnished in $1\frac{1}{4}$, $1\frac{1}{2}$, 2 and 3 inch sizes.

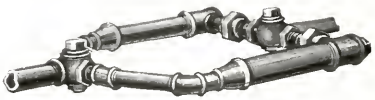


Figure 850

BOWSER REGISTERING MEASURE [FIGURE 760]

THE Bowser Figure 760 Registering Measure is a complete device for accurately measuring and recording the amount of liquid flowing through a pipe line. It is especially applicable for use where high pressures and high temperatures are encountered.

In order to satisfactorily meet a wide and varied range of applications the Figure 760 Registering Measures are built in nine pipe line sizes, from $\frac{3}{4}$ to 10 inch with capacities ranging from 1 to 1500 G.P.M., and may be furnished in either bronze or cast iron construction.

The measures constructed of bronze are designed for use in handling gasoline, benzine and liquids of similar characteristics. The measures of cast iron construction are designed for the handling of such liquids as lubricating oils, fuel oils, paint oils, etc. And where there is any doubt as to the capability of the measure to handle certain liquids, complete details with sample of liquid should be submitted to our Engineering Division for their consideration and analysis. The Figure 760 is not recommended for the handling of water.

The Figure 760 is built in the following sizes: $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, 3, 4, 6, 8 and 10 inch. The measures from $\frac{3}{4}$ to 4 inch, inclusive, will withstand a maximum working pressure of 300 pounds. The 6, 8 and 10 inch measures will withstand a maximum working pressure of 75 pounds. The 3 inch and larger sizes are standard with flange connections—smaller than 3 inch are standard with union connections.

The registering mechanism of the Figure 760 is carefully and substantially constructed. The $\frac{3}{4}$ to 3 inch sizes inclusive register to 1,000,000 gallons and repeat automatically. The 4 to 10 inch sizes inclusive register in 10 gallon units to 10,000,000 gallons and repeat automatically. All bearings and parts subjected to greatest wear are of hardened materials. The smallest number of working parts consistent in any assembly of this kind are used. Each part is not only carefully machined but finished by hand to insure a perfect assembly, and a long term of satisfactory operation.

After being assembled, each Registering Measure is thoroughly tested and the gears of the metering device calibrated under actual working conditions. After calibration the Registering Measure is again tested to insure accuracy.

Figure 760 can be operated by either gravity, air or pump pressure. When liquid is delivered to the measure by gravity, however, there must be a gravity head sufficient to produce 5 pounds pressure at inlet to meter to insure satisfactory operation. Operation of the measure and counter mechanism is started simultaneously with the flow of liquid through the pipe line in which it is installed.

The Figure 760 has a wide range of application. It is indispensible wherever an accurate record of the amount of liquid flowing through a pipe line is desired or necessary. It is especially adapted for the handling of hot tar and asphalt. It is frequently used in industrial installations where a central pumping unit supplies liquid to several points of discharge where it is used in mixing and manufacturing processes. In these cases a measure is placed in each line, thus providing a record of consumption by each department or point of discharge, as well as of the total amount used. It is also successfully used for loading or unloading the contents of tank cars, tank steamers, storage tanks and a host of other applications. This measure, in fact, may be used under most any conditions where the range of temperatures, pressures and specifications of liquids is wide and varied.

To enable us to accurately determine correct Registering Measure specifications, complete information relative to installation conditions and requirements should be submitted for consideration and approval.

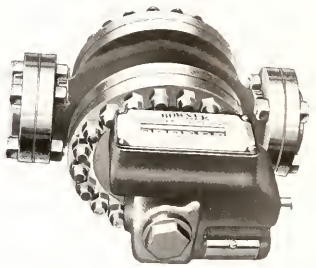
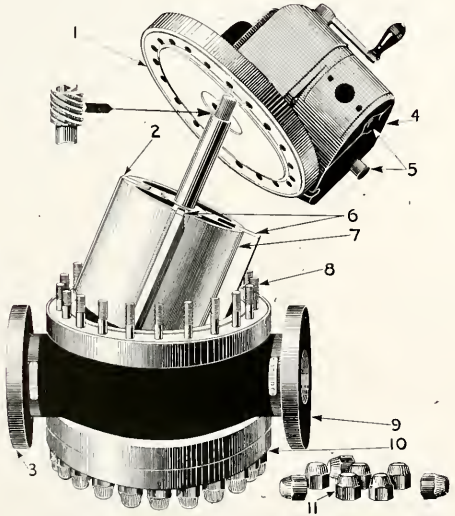


Figure 760 Registering Measure With Flange Connections

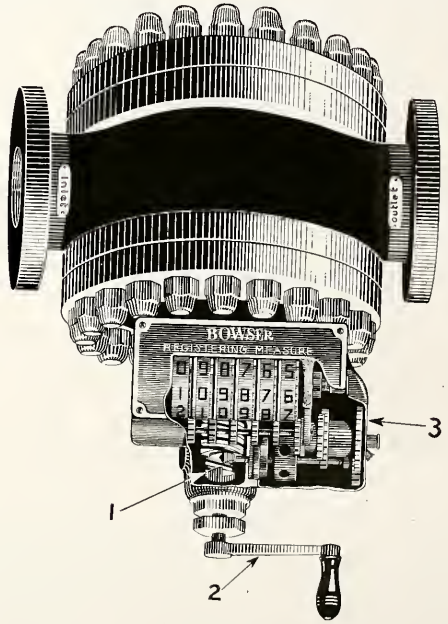
View of Fig. 760 Showing the Upper Head and Rotor Removed



1. Upper Head
2. Rotor Blade
3. Flange
4. Clock Case
5. Oil Cups
6. Rotor Blades
7. Rotor
8. Studs
9. Flange
10. Lower Head
11. Stud Nuts

Illustration above and on reverse side shows Left Hand type measure (inlet on left side, when facing counter or crank handle), with flange connections. 3" and larger sizes are standard with flange connections. Smaller than 3" are standard with union connections.

View of Fig. 760 Showing a Section of the Clock Case Broken Away



1. Clutch
2. Crank
3. Clock Case

BOWSER REGISTERING MEASURE [FIGURE 760]

Specifications

STANDARD EQUIPMENT

The Standard Figure 760 Registering Measure is a complete measuring and recording device, furnished in $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, 3, 4, 6, 8 and 10 inch pipe sizes.

CONSTRUCTION: Bronze when measure is to be used for handling gasoline and similar liquids; cast iron for lubricating oils, etc. Measures are constructed throughout of best materials carefully machined and assembled, thoroughly tested for accuracy under actual working conditions.

RECORDING MECHANISM: The $\frac{3}{4}$ to 3 inch sizes inclusive record to 1,000,000 gallons and repeat automatically. The 4 to 10 inch sizes inclusive register in 10 gallon units to 10,000,000 gallons and repeat automatically.

PRESSURES: Measures from $\frac{3}{4}$ to 4 inch inclusive will withstand a maximum working pressure of 300 pounds. The 6, 8 and 10 inch measures will withstand a maximum working pressure of 75 pounds.

CONNECTIONS: Smaller than 3 inch are standard with union connections. 3 inch and larger sizes are standard with flange connections. All flanges are drilled and faced per A. S. M. E. specifications.

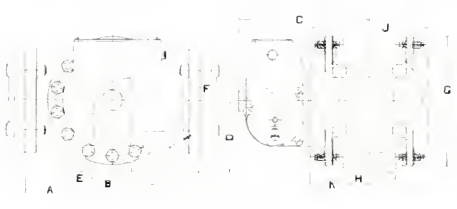
OPERATION: Operated by either gravity, air or pump pressure.

FINISH: Red enamel when used for gasoline and other volatile liquids; black enamel for lubricating oils and other similar liquids.

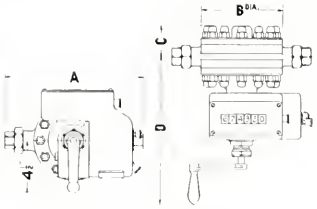
NOTE: The Standard Figure 760 is furnished in the Right Hand type (inlet on right hand side when facing counter). May be supplied with inlet on Left Hand side if desired, and specified.

EQUIPMENT FURNISHED AT EXTRA COST

Figure 753-B Air Release, Pipe Line Strainers, By Pass, Steam Jacket.



FLANGE CONNECTIONS



UNION CONNECTIONS

Inches	Dimensions IN Inches										Shipping Weight (Approx.)	Maximum G.P.M.		Minimum G.P.M.	Connections
	A	B	C	D	E	F	G	H	J	K		Oil	Petrol.	Oil or Petrol.	
$\frac{3}{4}$	12	7	$2\frac{1}{4}$	$12\frac{3}{4}$	—	—	—	—	—	—	50	10	8	1	1" Union
1	13	7	$3\frac{1}{4}$	$13\frac{1}{4}$	—	—	—	—	—	—	65	16	13	1	$1\frac{1}{4}$" "
$1\frac{1}{2}$	$15\frac{1}{4}$	$9\frac{1}{4}$	4	$13\frac{1}{2}$	—	—	—	—	—	—	130	37	30	4	$1\frac{1}{2}$" "
2	$15\frac{1}{4}$	$9\frac{1}{4}$	5	$14\frac{1}{2}$	—	—	—	—	—	—	150	60	50	7	2" "
3	19	12	$12\frac{1}{2}$	$7\frac{3}{4}$	$3\frac{1}{4}$	1	13	4	11	$5\frac{1}{2}$	235	136	108	15	3" Flange
4	$22\frac{1}{4}$	15	$11\frac{5}{8}$	$9\frac{1}{2}$	4	$1\frac{1}{2}$	17	$5\frac{1}{4}$	$13\frac{1}{2}$	$6\frac{1}{2}$	350	240	190	26	4" "
6	25	16	$12\frac{5}{8}$	11	4	$1\frac{5}{8}$	21	$10\frac{3}{4}$	$15\frac{1}{2}$	$7\frac{3}{4}$	850	540	466	60	6" "
8	30	20	$16\frac{1}{2}$	$13\frac{1}{2}$	$4\frac{1}{2}$	$1\frac{5}{8}$	$25\frac{1}{2}$	13	$22\frac{3}{4}$	12	1750	985	750	100	8" "
10	34	26	$21\frac{1}{4}$	$15\frac{1}{2}$	5	$1\frac{7}{8}$	30	16	$27\frac{1}{4}$	$14\frac{1}{4}$	2490	1500	1250	165	10" "

All flanges drilled and faced A. S. M. E.

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XACTO METER

STANDARD 2" BOWSER XACTO METER

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

XACTO METER

FIGURE 764

The Bowser Xacto Meter is an instrument for accurately measuring and recording the amount of liquid flowing through a pipe line.

ADVANTAGES

Losses which have practically been accepted as necessary and attendant evils in the handling of liquids, from the time they are received until used or sold, are eliminated with the use of Xacto Meter. Losses due to over-measurement, unauthorized withdrawals, leaky pipe lines and leaky tanks are quickly detected by the Xacto. Every movement of every drop of liquid is fully accounted for by the complete, accurate check provided by this recording meter. Errors, arguments and disputes are eliminated—there is no guess work. Actual perpetual inventories are easily and accurately maintained. Counter readings may be taken at any time to determine the exact amount of liquid which has passed through the meter, but these records may be kept confidential when desired.

OPERATION

Xacto Meter operates on the positive, volumetric displacement principle—the same that has for many years, and is today being used in Bowser piston-type pumps—the accepted principle of absolute accuracy in the measurement of liquids. The design and construction of the metering mechanism in Xacto reduces mechanical friction to a minimum, and prevents leakage and slippage. The mechanism responds instantly to the slightest movement of the liquid, so that there is no possibility of any liquid passing through without first being measured and recorded. And there is no by-passing of liquid to compensate for inaccuracies in the measuring mechanism.

ACCURACY

Regardless of the rate of flow, either slow or fast, constant or intermittent, at low or high pressures, the measurement is always the same in Xacto. It will not give over-measurement as the rate of flow decreases. Widely varying conditions do not affect the accuracy of it in the least.

Xacto Meter is guaranteed to measure well within the legal tolerances suggested by the U. S. Bureau of Standards, the Weights and Measures Departments of every State in the Union, and by the Department of Weights and Measures of the Dominion of Canada.

¾"

1¼"

1½"

2"

3"

APPLICATION

Bowser Xacto Meter, Figure 764, can be used for handling practically any liquid that will flow through a pipe line (acids and water excepted). Gasoline, lubricating oil, kerosene, *fuel oil and lacquer thinner, are only a few of the many liquids which Xacto will handle. The materials used in the construction of Xacto will not be affected by the liquid to be handled, nor will the liquid be affected by these materials. Xacto measures them all with the same high degree of accuracy.

The application of Xacto Meter is almost unlimited. It checks incoming shipments of liquids—it shows the exact amount of liquid placed in storage tanks—it records all liquids withdrawn from storage tanks—it provides an absolute check on all liquid used—and thus it enables the maintenance of an accurate and complete inventory of each movement of the liquid. It fills the need exactly, wherever liquids are received, transferred, used and dispensed. It accomplishes all operations automatically—without gauging or guessing, without labor, without waste, without the use of a measure, and without exposing the liquid to the atmosphere.

SIZES AND CAPACITIES

Xacto Meter is manufactured in six pipe line sizes—¾", 1¼", 1½", 2", 2½" and 3"—with capacities to meet most conditions—ranging from a low flow of 2½ gallons per hour with the ¾" size, to a maximum of 15,000 gallons per hour with the 3" size. The principle of operation is identical in all sizes. (Capacities, pressures, temperatures and complete specifications of all sizes are given on page 4).

*Figure 770 All Metal Meter is specified for use when measuring fuel oil to furnaces or lehrs.

XACTO METER

FIGURE 764

All sizes of Xacto Meter are equipped with an easy-to-read, angular face dial, which shows at a glance the exact quantity of liquid which has passed through. The continuous counter on all sizes, except the ¾", is equipped with a cover, which can be locked, so that readings are available only to those holding keys.

The ¾" size is equipped with a continuous counter with 1/10 gallon wheel which records to 100,000 gallons and repeats automatically. It is not equipped with a set-back counter.

The 1¼", 1½" and 2" sizes are equipped with continuous counters, which record to 100,000 gallons and then repeat automatically. Set-back counters, equipped with 1/10 gallon wheels which record to 1,000 gallons and automatically repeat, are also furnished on these sizes.

The 2½" and 3" sizes are equipped with a continuous counter which records to 1,000,000 gallons and automatically repeats. Set-back counter (not equipped with 1/10 gallon wheel) records to 10,000 gallons and repeats automatically.

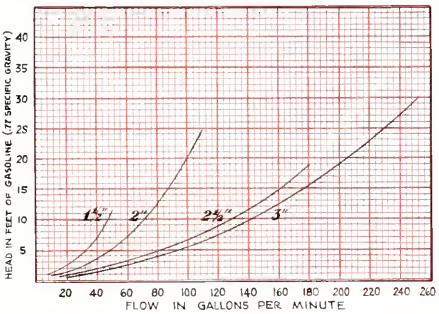
Set-back counters may be returned to 0 at any time. These counters provide a means for keeping an accurate check on individual sales or deliveries. Totalizer counters maintain a record of all liquid which has passed through the meter.

CONSTRUCTION

Xacto Meter is substantially constructed—built for hard and constant service. There are no delicate parts to break or get out of order. The entire measuring mechanism is immersed in liquid providing lubrication to most of the moving parts and forming a liquid cushion to the metering mechanism, eliminating excessive vibration.

Each meter is subjected to a thorough and rigid test before shipment to insure positive accuracy, smoothness of operation, maximum efficiency in performance and lasting durability.

COMPARATIVE RATES OF FLOW



The chart shows the comparative rates of flow of the 1½", 2", 2½" and 3" Xacto Meters at various head pressures. It must be remembered that the rate of flow is always dependent upon a number of factors, i. e., amount of head or pump pressure on the liquid, length and size of pipe lines, number of valves and other fittings in the line, viscosity of liquid and other varying installation conditions.

MAXIMUM FLOWS AND PRESSURES

The amount of liquid passing through the meters should never exceed the maximum G.P.M. capacities shown in the table on page 4. These capacities are based on pipe sizes, and maximum speeds at which the meters can be operated successfully and insure long life. The rate of flow will be dependent on the amount of head or pump pressure on the liquid, temperature and viscosity of liquid, length and size of pipe lines, and other varying installation conditions. There are no fixed requirements which can be given for producing maximum G.P.M. capacities of Xacto Meters, due to the many different types of installations and variable conditions which must be taken into consideration. The chart in center gives the flow in gallons per minute through the 1½", 2", 2½" and 3" Xacto Meters for the various head pressures (when handling gasoline).

The maximum working pressures which the Xacto Meter will withstand are 50 pounds per square inch on all sizes except the ¾". The ¾" will withstand a pressure of 125 lbs. Ordinarily a differential of less than 10 pounds between the outlet and inlet of the meter will deliver an amount of liquid equal to the maximum flow or capacity of the meter. In making installation of the meter it should be borne in mind that the pressure on the meter should never exceed the pressure required to deliver (to the point of discharge) an amount of liquid equivalent to the maximum capacity of the meter. This will insure maximum life and reduces the possibility of abusing the metering mechanism. When pump pressure is employed to deliver the liquid through the meter, the pump must be equipped with a by-pass relief valve set to relieve pressures in excess of the amount required to deliver a flow equal to the rated G.P.M. capacity of the meter. In gravity flow installations, where the head pressure is greater than that required to deliver the maximum gallons per minute capacity of the meter, steps should be taken to reduce the pressure so as to hold the flow within the maximum flow recommended

XACTO METER

FIGURE 764

Accessories and Variations From Standard Equipment:-

There are a number of accessories which while not included in the price of the standard meters (due to variable conditions) must be added in order to insure efficient operation and to meet conditions and requirements of each individual installation.

AIR RELEASE, FIGURE 753-C. This is a device which effects the release of all air from liquid flowing through a pipe line. Its use is essential when liquid is being supplied to the meter by means of pump pressure as the air which is always present in liquid delivered in this manner would cause an incorrect registration in the meter. This air release is fully described and illustrated in Figure 753-C Bulletin and its operation and manner of installation discussed in Figure 753-C Installation Bulletin.

COMBINATION AIR RELEASE AND STRAINER, FIGURE 775. This device meets the same general requirement as the Figure 753-B except that it is equipped with built-in strainer and is primarily designed for use with meters installed on truck tanks equipped with power "take off." It is fully described and illustrated in Figure 775 Bulletin.

PIPE LINE STRAINER FIGURE 730. Protects the measuring unit against dirt, pipe scale and other foreign particles which are frequently found in liquids, and which, unless removed, would be injurious to the metering mechanism. A strainer should be located in the pipe line as near the meter as practical, and on the inlet side.

FIGURE 781 AUTOMATIC VENT VALVE: This valve is connected to the top of the Figure 730 strainer and must be used on all gravity-operated Xacto Meter installations on tank trucks. It accelerates the speed of delivery and prevents air being drawn through the meter when the tank is nearly empty.

CHANGE IN COUNTER POSITION: The 1¼", 1½", 2", 2½" and 3" sizes can be furnished with the counter turned 90 degrees to either right or left from the standard position. This change requires an adapter plate and counter connector and necessitates changing the position of the meter cap 90 degrees. When desired, this special counter position, is furnished at small additional cost.

The sizes listed above can also be furnished with the counter turned 180 degrees from standard position. When desired, meters can be furnished in this manner, at no extra cost.

Orders must plainly specify change desired so that proper equipment can be furnished.

Specifications

STANDARD EQUIPMENT

The Standard Figure 764 Xacto Meter is a complete measuring and recording device, furnished in ¾", 1¼", 1½", 2", 2½" and 3" pipe sizes—cast iron construction—2", 2½" and 3" can also be furnished in aluminum construction.

DIAL: Angular face—deeply etched, easy to read. Enclosed in meter case, visible through heavy plate glass.

CONTINUOUS AND SET-BACK COUNTERS: ¾" meter is equipped with a continuous counter which records to 100,000 gallons (no set-back counter). 1¼", 1½" and 2" meters are equipped with continuous counters which record to 100,000 gallons—set-back counters on these sizes record to 1,000 gallons and are equipped with 1/10 gallon wheel. 2½" and 3" meters are equipped with a continuous counter which records to 1,000,000 gallons. Set-back counter (not equipped with 1/10 gallon wheel) records to 10,000 gallons. All counters repeat automatically. Set-back counters may be returned to 0 at any time.

LOCKING COVER: The continuous counter on all sizes, except the ¾", is equipped with a cover which can be locked over figures, so that readings are available only to those holding keys.

CONSTRUCTION: Built of the finest materials, carefully constructed throughout. Body, cast iron or aluminum—interior parts, material best suited to the liquids to be handled, selected for qualities of long wear and maximum service. It is designed for both indoor and out-of-door installations.

FINISH: Aluminum paint.

EQUIPMENT FURNISHED AT EXTRA COST

*Air Releases, Figure 753-C and 775

*Pipe Line Strainer, Figure 730.

NOTE: *For complete information on items marked * see Bulletins.*

GENERAL SPECIFICATIONS

Pipe Size Inches	Maximum Capacity G.P.M.	Maximum Pressure Pounds	WEIGHT IN POUNDS Cast Iron Net	Cast Iron Packed	Aluminum Net	Aluminum Packed	Diameter Inches	Height Inches
¾	10	125	21	35			7	10¾
1¼	25	50	62	80			11	14¾
1½	50	50	71	120			12⅛	14⅞
2	110	50	94	145	63	75	13⅞	15⅝
2½	180	50	215	285	130	190	21¼	20
3	250	50	225	375	140	210	23	20

An Xacto Meter DATA SHEET must be filled out and sent in with each order so that we may immediately determine the correct meter specifications, and thus avoid delay in shipment and insure satisfactory operation in actual use.

The 3" meter is fitted with flanged unions. All other sizes have female connections.

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Xacto Barreling Units

For "Filling To Full" Barrels and Other Containers of Various Types and Sizes

FIGURE 764-T

Figure 778-T is the Figure 764-T
Equipped with 10" Dia. Recording Dial

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

BOWSER Xacto Barreling Units [FIGURES 764-T & 778-T]

THE Figure 764-T Barreling Unit consists of a Standard Bowser Xacto Meter equipped with a temperature and specific gravity adjustment dial. This unit is designed for use in Refineries and other Industries where various kinds of oil, gasoline, kerosene and other liquids are barreled or packaged for distribution, or wherever automatic and accurate compensation for temperature variation is desired.

By means of the temperature and specific gravity adjustment dial, this unit compensates for the expansion or contraction of the liquid, due to variation in temperatures, and regardless of the temperature at which the liquid is handled, the meter reading after each operation shows the exact amount of liquid which has passed through the meter, based on a temperature of 60 degrees F.

When using the outfit for barreling purposes, each barrel or drum can be stamped with the exact amount of liquid contained and the customer invoiced on that basis. Drums and various other containers, in a variety of sizes, can be quickly filled and an accurate record kept of the exact amount of liquid placed in each one, without the laborious process of weighing each container before and after filling.

Figure 764-T is ideally adapted for measuring exact quantities of liquids into compounding and mixing vats and is suited for installation in any pipe line where accurate measurement at a mean temperature of 60° F. is of vital importance regardless of the variation in the temperature of the liquid handled. It is also well adapted for barrel filling when odd sized or dented used drums are to be filled, in which case a standard barrel filling nozzle would be employed on the end of a length of hose.

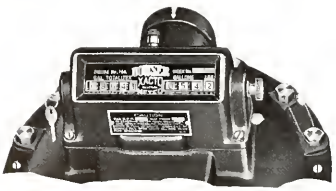
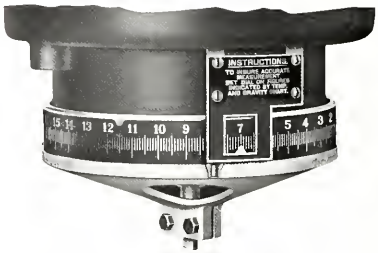


FIGURE 764-T DIAL

The easy-to-read counters of Xacto Measuring Units show at a glance the exact number of gallons and tenths of gallons which have passed through the meter for any one operation and the total number of gallons measured.

When used in connection with a reliable type of automatic barrel filler the barreling process accomplished with this unit is practically automatic. The operator needs only to insert the nozzle of the barrel filler, set the temperature and specific gravity adjustment dial, and start the flow of liquid through the line. When the barrel is filled the valve of the barrel filler automatically closes and the meter reading shows the exact amount of liquid which has been placed in the barrel.

Automatic Barrel Fillers are a standard product on the market, but are not furnished by Bowser.



TEMPERATURE AND SPECIFIC GRAVITY ADJUSTMENT DIAL

After ascertaining the actual temperature and specific gravity of the liquid to be measured, reference is made to a chart which indicates the proper setting of the dial to correct the volume of liquid measured on the basis of 60° F.

TEMPERATURE AND SPECIFIC GRAVITY ADJUSTMENT

The Bowser Figure 764-T Barreling Unit is fitted with a unique yet simple and fool-proof adjustment dial which permits making adjustments for handling liquids at various temperatures and specific gravities. This adjustment compensates for the expansion or contraction of the liquids and automatically insures accuracy in measurement, based on 60 degrees F.

The dial is divided into numbered graduations and can be revolved so as to bring any of the numbers or fractions thereof in coincidence with the pointer of the indicator plate attached to the side of the meter (see illustration above).

The meter is accompanied by a temperature and specific gravity chart, and after the actual temperature and specific gravity of the liquid to be metered have been ascertained, it is a simple

matter to refer to the chart and determine the proper setting of the dial to compensate automatically for any expansion or contraction in the volume of the liquid due to temperature changes.

This chart is furnished in a holder provided with a hook so that it may be attached to measuring unit by inserting it under the head of one of the cap screws. The holder is furnished with glass face and finished in green.

When the dial is properly set according to the actual temperature of the liquid, the meter reading after each operation shows the exact amount of liquid which has passed through the meter, corrected on a temperature basis of 60 degrees F.

The dial is attached to the meter adjusting screw and as the dial is revolved the meter is automatically adjusted to deliver an amount of oil in accordance with the position of the dial.

Operation of the meter is in no way complicated by this temperature and specific gravity control feature as it is very simple to operate and requires only a moment for adjustment.

It is important when placing orders for this unit, that complete information be given relative to the conditions under which it will be required to operate. This will enable us to furnish a chart of proper specifications.

BOWSER XACTO METER

The measuring and recording device contained in this unit is the well known Bowser Xacto Meter. It measures by volumetric piston-type displacement and is accurate to a fine degree. Regardless of temperatures, viscosity, specific gravity or rate of flow, whether slow or fast, constant or intermittent, the measurement is by actual volume displacement, with no by-passing to compensate for inaccuracies. It records well within the strictest legal tolerances.

The Figure 764-T is equipped with a continuous counter which records to 100,000 gallons and automatically repeats and also with a set back counter which records in gallons and tenths of gallons to 1,000 gallons and repeats. The set back counter may be returned to zero whenever desired.

The Figure 778-T is designed for use where it is desired to fill barrels or other containers with even gallons instead of in gallons and tenths of gallons or "to full" wherever the float in the Barrer Filler shuts off.

With the large dial in place of the regular counter, the operator can fill until the float shuts off, then open the valve of the Barrel Filler, and then by observing the dial, which may be located at some distance from the barrel, "top off" to an exact even gallonage. Thus it is possible for a barreler to produce standard packages in small quantities—the same amount of liquid in each package.

The dial is 10" in diameter and is vertically mounted on a swivel so that it may be turned to face any direction desired. It is graduated in quarts and gallons to 100 gallons. Hands operate clockwise and may be set back to zero at

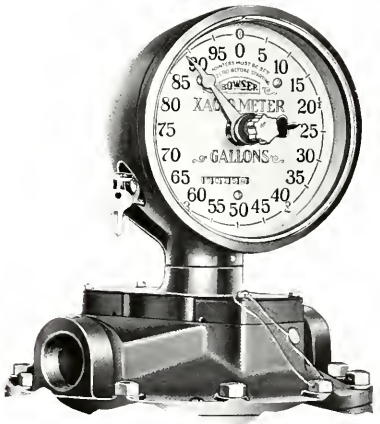


FIGURE 778-T DIAL
Measuring Unit is the Figure 764-T

any time. Totalizer counter is set into face of dial and provided with shutter which may be locked to conceal figures. It records to 1,000,000 gallons and repeats.

To meet the needs of those plants whose production does not require a separate measuring unit for each grade of liquid packaged, Bowser has designed a Portable Carriage, Figure 281, on which a Figure 764-T or 778-T Measuring Unit may be mounted and used to satisfactorily handle several grades of similar liquids. For complete information on the Portable Carriage, see Figure 281 Bulletin.

Xacto Barreling Units [FIGURES 764-T & 778-T]

In some plants it is possible to advantageously group some of the liquids, which are similar in color and characteristics, so that as many as six different grades may be satisfactorily handled through one measuring unit by a simple "header" arrangement connecting the piping to the measuring unit. Bowser engineers will survey plant conditions and requirements and recommend the equipment that best meets the individual needs.

Xacto Measuring Units are equipped with a special non-mixing plate which minimizes mixing of the various liquids to a negligible degree.

GENERAL SPECIFICATIONS

The metering mechanism and barreling assembly is furnished in 1½ in. pipe size only, and is designed for handling liquids flowing by gravity or under pump pressure. A maximum delivery speed of 50 G.P.M. may be attained under favorable operating conditions with a sufficient pressure. The maximum pressure on the meter should never exceed 10 pounds. Under average operating conditions a 4 to 8 pound pressure at the meter, which is the equivalent of a 10 ft. to 20 ft. head, will give the necessary speed in delivery—and insure efficient service.

(Note: Head pressure varies according to weight of liquid, the figures given being approximately accurate for liquids weighing 7 lbs per gallon, which would include lubricating oils.)

Specifications

STANDARD EQUIPMENT FIGURE 764-T

MEASUREMENT: Accomplished by 1½ inch Xacto Meter which measures by positive volumetric piston-type displacement, extremely accurate. See Figure 764 Bulletin for further and complete details.

CONSTRUCTION: Designed and built to withstand the severe requirements of continuous service.

CAPACITY: 50 gallons per minute (maximum).

PRESSURE: Meters are tested under 50 lbs., however a maximum of 10 lbs at the meter will give the necessary speed in delivery.

FINISH: Aluminum bronze paint.

TEMPERATURE AND SPECIFIC GRAVITY ADJUSTMENT DIAL: Chart furnished to show proper setting of dial. Dial may be rotated and set to compensate for various temperatures and specific gravities of liquids. Correction made on basis of 60° F.

CONTINUOUS COUNTER: Records to 100,000 gallons and repeats, equipped with locking cover, making figures available to only those having keys; cannot be set back.

SET BACK COUNTER: Records in gallons and tenths of gallons to 1,000 gallons and repeats; can be set back to zero at any time.

SHIPPING WEIGHT: 135 pounds (approximate).

INLET AND DISCHARGE OPENINGS: 1½ inch size.

DIMENSIONS: Height, 16½ inches, width, 12⅛ inches.

FIGURE 778-T

DIAL: 10" diameter, glass-covered—graduated in multiples of 5 gallons up to 100. Large hand makes one complete revolution of the dial for each 5 gallons discharged—the small hand advances to the next 5 gallon graduation when the large hand has made the complete revolution. The large numerals indicate single gallons—the graduations on the outer edge indicate quarts.

CONTINUOUS COUNTER: Set in face of dial—records to 1,000,000 gallons and repeats; equipped with locking cover, making figures available to only those having keys, cannot be set back.

SHIPPING WEIGHT: 175 pounds (approximate).

DIMENSIONS: Height overall, 24¾"; width overall, 12⅛".

EQUIPMENT FURNISHED AT EXTRA COST

FIGURE 730 STRAINER: For removing any foreign matter from liquid, thus protecting inner parts of meter.

FIGURE 753-C AIR CHAMBER AND AIR RELEASE: For effectively removing and releasing any air in liquid, thus assuring correct registration of measuring unit. Also absorbs impact pressure; essential where pump is used to deliver liquid to measuring unit.

FLEXIBLE HOSE: 42" long x 1½", with male taper pipe couplings.

FLOAT CONTROL NOZZLES AND QUICK CONNECTORS: Not furnished by Bowser but may be secured direct from several manufacturers.

PORTABLE CARRIAGE: Figure 281, for carrying the Figure 764-T or 778-T, when one measuring unit is adequate to meet production requirements and liquids are similar in color and characteristics.

*NOTE: *For complete information on these items see Bulletins.*

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XACTO METERS

equipped with

Automatic Predetermined Multiple Quantity Measuring Mechanism

AUTOMATICALLY MEASURES
ANY
PREDETERMINED QUANTITY
FROM
1 TO 2000 GALLONS

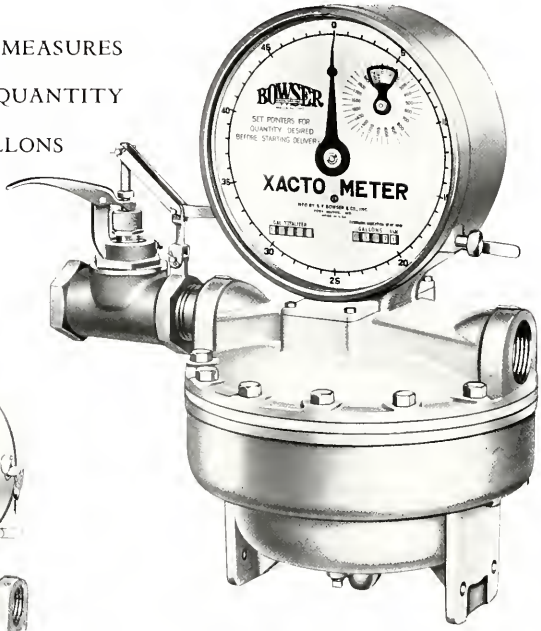
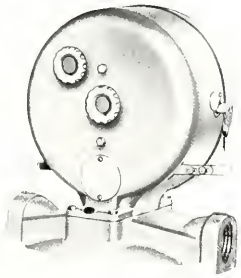


FIGURE 765 AUTOMATIC XACTO METER
(Left Hand Assembly)

Above view shows the Figure 765 Automatic Xacto Meter, an adaptation of the standard Figure 764 Xacto, equipped with the automatic, predetermined quantity mechanism. This automatic predetermining mechanism is also available with the Bowser Fig. 776 all-metal Xacto, identified as the Bowser Figure 785. Both types are built in the 1½" and 2" pipe sizes, with capacities of 50 and 110 G. P. M.



REAR VIEW OF DIAL HOUSING

View showing the predetermined quantity control knobs on rear of 10" diameter dial housing.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

Automatic Xacto Meters

FIGURES 765 & 785

FIGURE 765

The Figure 765 Automatic Xacto Meter is an ingenious adaptation of the internationally known and approved Bowser Figure 764 Xacto Meter.

It accurately measures and records any pre-determined quantity of liquid from 1 to 2000 gallons and shuts off automatically when the quantity for which it is set has been discharged.

The Figure 765 is especially designed for use on fuel oil and range oil delivery trucks. It enables the driver to set the predetermined quantity mechanism for the exact number of gallons to be delivered — open the control valve and, when the predetermined number of gallons have been discharged the meter automatically shuts off the flow. Thus in making deliveries to remote points from the truck, one man can easily do the work formerly requiring two men, and it accurately, in less time and with greater customer satisfaction.

Its positive, automatic operation will speed up deliveries, cut delivery costs, increase customer confidence, build customer good-will and at the same time give an accurate record of each delivery and a complete dependable check on total deliveries. Fixed routes can be established by making possible accurate deliveries of any size "dump." Back-tracking is eliminated. Less equipment is required. Costly multiple compartment tanks are unnecessary. No losses due to over-measure. No bucketing. No guess-work. No arguments or complaints about quantities delivered. A full measure on every delivery and a full accounting of every gallon delivered.

The Figure 765 Automatic Xacto Meter, like all other Bowser Xacto Meters, accomplishes its dependable measurement by positive volumetric displacement—without by-pass—accurate under all conditions of service. Its accuracy is guaranteed to be well within strictest legal tolerances.

The large 10" diameter dial is graduated in single gallons with numerals in multiples of 5 gallons up to 50 gallons. The inset dial is graduated in multiples of 50-gallons with numerals indicating in multiples of 100-gallons up to 2000 gallons.

The dial hands are set to the desired quantity by individual control knobs conveniently located on the rear of the dial housing. The hands automatically return to "O" as the liquid is being discharged.

Setting the dial hands for any predetermined quantity is a simple, easy matter. If it is desired to deliver, say 250 gallons, you simply set the inset dial hand to the 250 gallon graduation, open the control valve and the flow starts and continues until exactly 250 gallons have been delivered at which time the control valve automatically shuts off the flow. To deliver, say 275 gallons, you set the inset dial hand to the 250-gallon graduation and the large dial hand to the 25 gallon graduation, open the control valve and the balance is accomplished automatically by the predetermining mechanism.

The large dial is provided with two openings through which the figures of a continuous gallon counter and an individual delivery counter are clearly visible.

The continuous gallon counter maintains a continuous and accurate record of the total number of gallons which have passed through the meter. This counter records to 100 000 gallons and automatically repeats. It *cannot* be set back.

The individual delivery counter provides an accurate check on individual sales or deliveries and also serves as the customers indication and assurance of full measure. It records to 10 000 gallons and then repeats and it is equipped with a gallon wheel. It may be set back to "O" after completed delivery.

The opening for the continuous gallon counter is fitted with a shutter which may be locked by a separate lock and key to conceal the accumulated counter figures.

The opening for the individual delivery or set-back counter is also fitted with a shutter which is operated by the set-back knob. This shutter conceals the counter figures while the counters are being set back to "O" and keeps them concealed until all counter wheels are at exactly "O". Thus positive assurance is provided that the counter is "clear" at the start of each delivery, and that the amount recorded is the exact amount delivered.

The inset dial is provided with an "open" position to permit continuous measurement of the liquid, when desired. When the inset dial hand is set at the "open" position on the dial, the predetermining quantity mechanism is disengaged and the flow continues without interruption until the control valve is manually closed. Whether measuring pre determined quantities or continuous flows, an accurate, dependable check is maintained on the exact amount of liquid passed through the meter.

The Figure 765 is made in two pipe sizes—1½" and 2" with capacities of 50 and 110 gallons per minute respectively. It is attractively finished in aluminum paint with control valve and trim in brass and dull nickel. It is constructed of highest quality materials and built to operate without interruption for a long period of time.

To accommodate varying truck mounting requirements, the Figure 765 can be furnished with dial mounted as shown on opposite side with control valve at left of dial (left hand assembly), or turned 180 degrees with control valve at right of dial (right hand assembly). The control valve is always located on inlet side of meter. Meters are available only with face of dial parallel with line of flow. Orders must specify exact type of dial mounting desired, either left hand or right hand assembly.

FIGURE 785

The Figure 785 Automatic Xacto Meter embodies the same operating features and advantages, is made in the same sizes as the Figure 765, but being constructed entirely of metal is especially adapted for successfully handling a wide range of liquids and temperatures without any affect on its accuracy and without danger of any detrimental affect on the meter mechanism or the liquid to be handled.

For complete details on Xacto Meter operation, construction and technical specifications, refer to Bowser Figure 764 and 776 Bulletins.

EQUIPMENT FURNISHED AT EXTRA COST

There are a number of accessories which while not included in the price of the standard meters (due to variable conditions) must be added in order to insure efficient operation and to meet conditions and requirements of each individual installation.

AIR RELEASES: For removal of all air that may be in the lines.

PIPE LINE STRAINERS: To prevent dirt or other foreign matter from entering the meter and interfering with its efficiency.

*For complete details refer to Bowser Bulletins Figures 753-C 775 and Pipe Line Strainers.

SPECIFICATIONS

Size	Height Overall		Width Overall		Diam. of Meter Bowl		Capacities		Net Weights Lbs. Approximate		Shipping Weights Lbs. Approximate	
	Fig. 765	Fig. 785	Fig. 765	Fig. 785	Fig. 765	Fig. 785	Max. G. P. M.	Max. Lbs. Press	Fig. 765	Fig. 785	Fig. 765	Fig. 785
1½"	22⅜"	25"	19¾"	19¾"	12⅛"	12⅛"	50	50	85	115	125	165
2"	23¼"	25⅝"	20⅝"	20⅝"	13⅞"	13⅞"	110	50	110	150	160	200

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Xacto Barreling Units

For Filling "Standard Packages"

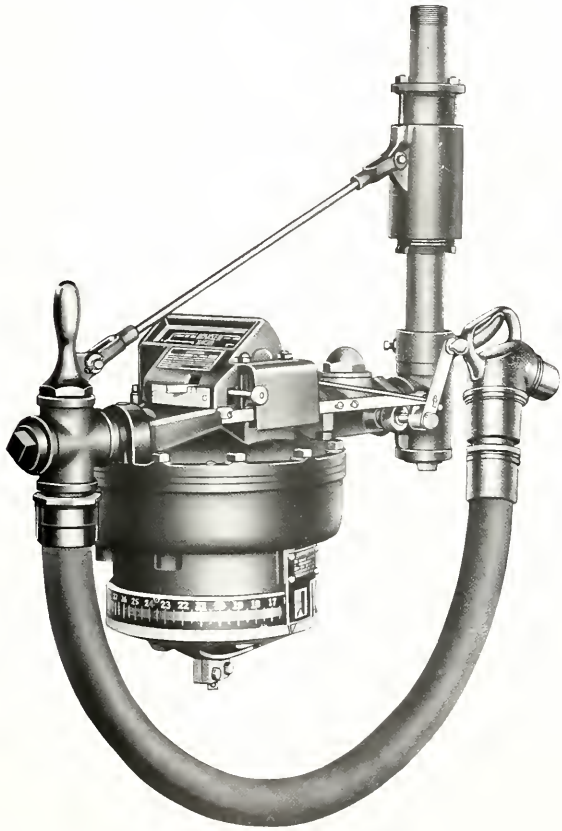

FIGURE 766-A BARRELING UNIT

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Xacto Barreling Units

FIGURES 766 & 766-A

BOWSER Figure 766-A is an automatic, pre-determined, three-quantity Xacto Barreling Unit especially designed and constructed to meet the exact requirements of Refineries and other Industries where lubricating, transformer, cylinder and engine oils, gasoline, kerosene and liquids of similar characteristics are barreled in large quantities into "standard packages".

This outfit combines a complete barreling service into one compact unit. It automatically measures, records and discharges any one of three pre-determined quantities within a wide range of barreling operation requirements (12½ to 180 gallons or parts of gallons) provided the largest pre-determined quantity is not greater than three times the smallest quantity. For example, if requirements call for a unit to measure a pre-determined quantity as low as twenty gallons, the same unit cannot be set to measure a quantity in excess of sixty gallons. Each unit is individually built and adjusted to handle the three quantities needed to meet the operator's requirements. Under certain conditions there are variations and limitations to the quantities which this measuring unit will handle. It is therefore essential that complete information regarding any proposed barreling unit installation be submitted to our Engineering Department for their consideration and approval.

The unit is capable of dispensing the liquid at an approximate speed of 50 G.P.M. with a degree of accuracy well within the tolerances prescribed by the U. S. Bureau of Standards. A continuous counter incorporated into the device maintains an accurate record of all liquid packaged.

By setting a temperature and specific gravity adjustment dial, a quantity may be obtained which is the exact equivalent of the quantity desired at 60 degrees F. In this way oils and other liquids having a wide range of specific gravities and temperatures can be handled and barreled in quantities which are the equivalent at 60 F. of any of the three pre-determined quantities, which the measuring unit is capable of delivering. Adjustment of the temperature control dial is very simple and can be performed by any ordinary workman.

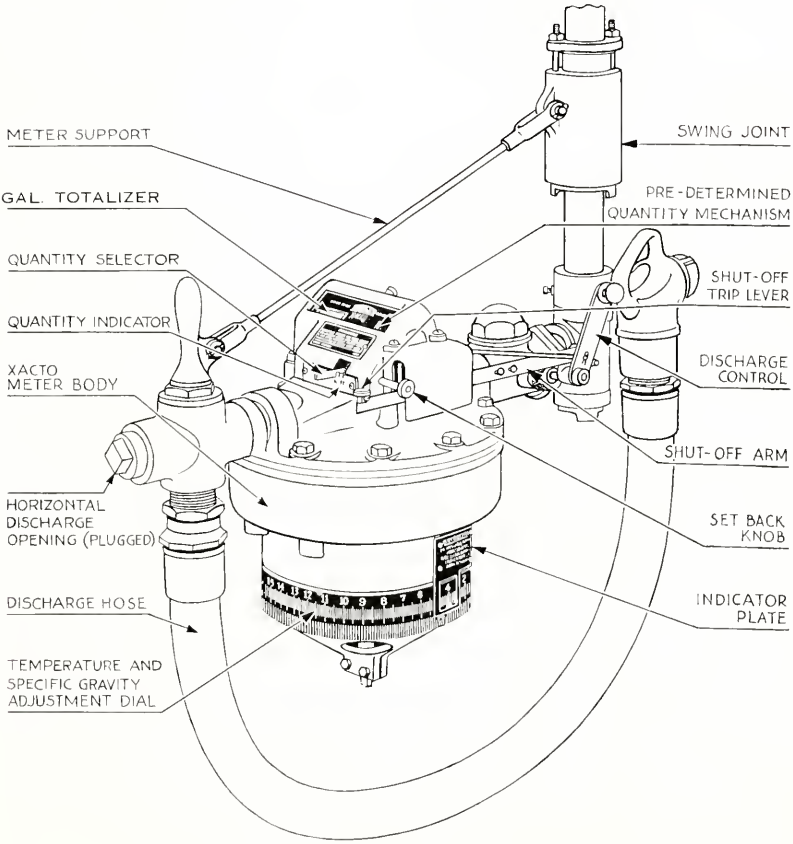
The barreling of oils, with this device, is a very simple and easy matter. After setting the mechanism for the quantity desired; making adjustment for temperature and specific gravity; and opening the discharge, the balance of the barreling operation is then entirely automatic. One operator handles the entire process. After the discharge has been opened and the flow of liquid started no further attention is required. While one barrel is being filled the operator is permitted to plug and prepare for shipment the barrel just filled and arrange empty barrels in position for filling.

This type of barreling service effects a great saving of time, labor and expense—it eliminates the necessity of costly and laborious weighing after filling. Barrel handling operations are reduced to the minimum. And because of the fact that the same exact pre-determined quantity is put into each barrel, bookkeeping records and methods are greatly simplified and reduced for both the barreling concern and those receiving the barreled liquids. The outfit is ruggedly constructed to withstand the hard usage to which it will be subjected in barreling service, insuring many years of dependable and uninterrupted operation.

The ease and rapidity with which the Bowser Xacto Meter Barreling Unit places pre-determined quantities of oils into barrels or drums is really remark-

Xacto Barreling Units

FIGURES 766 & 766-A



able, especially when accuracy in measurement is taken into consideration.

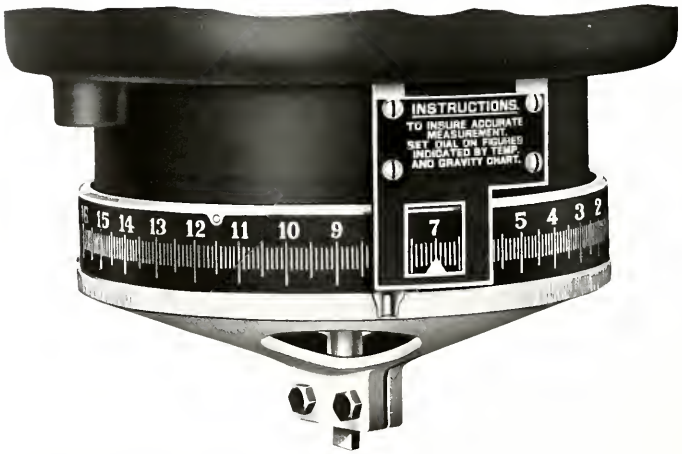
This barreling unit incorporates the well-known Bowser Xacto Meter for the accurate measurement and recording of the oils and an automatically controlled mechanism for barreling the oils easily, quickly, and efficiently.

TEMPERATURE AND SPECIFIC GRAVITY ADJUSTMENT

The Bowser Figure 766-A Barreling Unit is fitted with a unique yet simple and fool-proof adjustment dial which permits making adjustments for handling liquids at various temperatures and specific gravities. This adjustment compensates for the expansion or contraction of the liquids and automatically insures accuracy in measurement, based on 60 degrees F.

The dial is divided into numbered graduations and can be revolved so as to bring any of the numbers or fractions thereof in coincidence with the pointer of the indicator plate attached to the side of the barreling unit (see illustration below).

The meter is accompanied by a temperature and specific gravity chart, and after the actual temperature and specific gravity of the liquid to be metered have been ascertained, it is a simple matter to refer to the chart and determine the proper setting of the dial to compensate automatically for any expansion or contraction in the volume of the liquid due to temperature changes.



After ascertaining the actual temperature and specific gravity of the liquid to be measured, reference is made to a chart which indicates the proper setting of the dial to correct the volume of liquid measured on the basis of 60 F.

This chart is furnished in a holder provided with a hook so that it may be attached to the measuring unit by inserting it under the head of one of the cap screws. The holder is furnished with glass face and finished in green.

When the dial is properly set according to the actual temperature of the liquid, the meter reading after each operation shows the exact amount of liquid which has passed through the meter, corrected on a temperature basis of 60 degrees F.

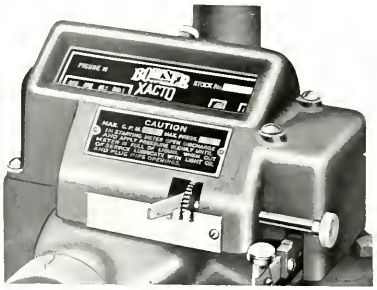
The dial is attached to the meter adjusting screw and as the dial is revolved the meter is automatically adjusted to deliver an amount of oil in accordance with the position of the dial.

Operation of the meter is in no way complicated by this temperature and specific gravity control feature as it is very simple to operate and requires only a moment for adjustment.

It is important when placing orders for this unit, that complete information be given us relative to the conditions under which it will be required to operate. This will enable us to furnish a chart of the proper specifications.

PRE-DETERMINED QUANTITY MECHANISM

This unit is provided with a gear shift arrangement or quantity selector which may be easily and quickly set for any one of the three quantities which the meter is capable of delivering. After the lever has been set for the desired quantity and the discharge valve opened, the flow will continue until the specified quantity has been delivered, whereupon the discharge valve is automatically closed. If it is desired to stop the flow of liquid before the quantity for which the meter is set has been delivered, this may be accomplished by manipulating the shut-off trip-lever. The mechanism can then be returned to the starting position by means of the set-back knob.



This mechanism can be set back to the starting point, when a partial delivery has been made, thus clearing the mechanism and making it certain that the next package delivery will discharge the full package quantity for which it has been set. This feature permits withdrawing small quantities of oil for sampling purposes, and tests which are frequently made. Setting back the mechanism always insures the delivery of a full package.

BOWSER XACTO METER

The Bowser Xacto Meter, incorporated in the Figure 766-A Barreling Unit as the measuring and recording device, is a volumetric, piston-type, displacement meter, which operates by positive mechanical displacement. Regardless of the temperature, viscosity, specific gravity, or the speed of flow, whether constant or intermittent, slow or fast, the measurement is by actual volume displacement, therefore always the same—accuracy well within the strictest legal tolerances. There can be no slippage or leakage. Each

quantity is accurately measured and recorded.

RECORDING MECHANISM

The measuring unit is equipped with a totalizer which maintains a continuous record of the total number of gallons packaged, giving an accurate and dependable check. It records to 100,000 gallons and repeats. It cannot be set back.

DISCHARGE ASSEMBLY

The discharge assembly consists of a 1½-inch hose 42 inches long, complete with necessary couplings, a discharge nozzle and two nozzle tips (one for containers with large openings and one for smaller openings.) The hose may be attached in either a horizontal or perpendicular position from the meter connection. A pipe plug is furnished for the opening not being used. A hook is provided for conveniently hanging up the hose when not in use.

SHUT-OFF TRIP LEVER

If, when filling barrels or withdrawing small quantities for sampling or other purposes, it is desired to stop the flow of oil quickly, it is only necessary to trip the auxiliary control lever which has been provided at a convenient point near the counter mechanism.

INSTALLATION

The barreling unit is so designed and constructed that when it is installed in the discharge line from the storage tank, it may be swung in a complete arc of 360 degrees, by means of a swing joint, and stopped at any point for filling packages. The entire assembly always remains in a level horizontal position, regardless of the size of the package being filled.

To meet the needs of those plants whose production is not sufficient to require a separate measuring unit for each grade of liquid packaged, Bowser has designed a Portable Carriage, known as Figure 281, on which the Fig. 766-A Measuring Unit may be mounted and used to satisfactorily handle several grades of similar liquids. For complete information on the Portable Carriage, see Figure 281 Bulletin.

In some plants it is possible to advantageously group some of the liquids, which are similar in color and characteristics, so that as many as six different grades may be satisfactorily handled through one measuring unit by a simple "header" arrangement connecting to the measuring unit. Bowser engineers will survey your plant layout and production requirements and recommend the equipment best suited to your needs.

A special non-mixing plate has been provided in the measuring unit to minimize mixing of the various liquids to a negligible degree.

GENERAL SPECIFICATIONS

The metering mechanism and barreling assembly is furnished in 1½" pipe size only, and is designed for handling liquids flowing by gravity, or under pump pressure. A maximum delivery speed of 50 G.P.M. may be attained under favorable operating conditions with a sufficient pressure. The meter is tested under 50 pounds pressure, but a maximum of 10 pounds will be sufficient in most cases to provide the desired rate of delivery. Under average operating conditions a 4 to 8 pound pressure at the meter, which is the equivalent of a 10′ to 20′ head, will give the necessary speed in delivery—and insure efficient barreling service.

FIGURE 766 BARRELING UNIT

The Figure 766 Xacto Meter Barreling Unit differs from the Figure 766-A solely in the type of discharge assembly provided. Instead of the flexible discharge assembly, it is equipped with a rigid or stationary discharge and the discharge control valve is on the outlet side of the meter instead of on the inlet side, as shown in illustration at right.

The discharge assembly is adjustable by means of a lever which raises and lowers it about one inch to provide ample clearance for rolling packages into position underneath without interference, and to permit dropping the nozzle into the fill opening.

The two discharge nozzles furnished as standard accessories with this barreling unit, consists of one primarily designed for filling 50 and 55 gallon drums., and the other for 30 gallon drums. The nozzle tips are of sufficient length that when placed in the opening of the drum the operator is sure the liquid will be discharged without spilling or slopping.

When installed, the unit can be swung in a complete arc of 360 degrees and stopped at any point for filling packages. The entire assembly always remains in a level horizontal position regardless of the size of package being filled.

The Figure 766 Barreling Unit is especially designed for use where the containers to be filled are of standard sizes and where the flexibility offered by the Figure 766-A meter is not required. Under favorable conditions it will turn out a slightly greater number of packages in the same length of time than the Figure 766-A.

The Figure 766 is designed for stationary installation and thus it is not adapted for mounting on the Portable Carriage and use in handling more than one grade of liquid.

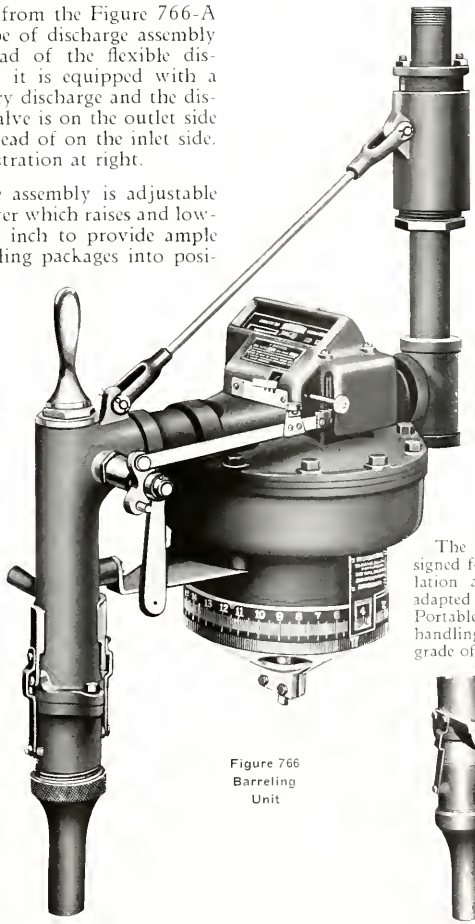
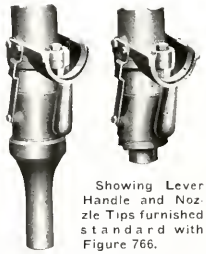


Figure 766 Barreling Unit



Showing Lever Handle and Nozzle Tips furnished standard with Figure 766.

Xacto Barreling Units

Specifications

STANDARD EQUIPMENT

CHARACTERISTICS: Measures and discharges to barrel any three pre-determined quantities within a range of from 10½ gallons to 150 gallons, providing largest quantity is not more than three times the smaller. Compensates for variation in specific gravity and temperature and delivers quantities which are equivalent of quantity desired at 60° F.

MEASUREMENT: Accomplished by Bowser Xacto Meter which measures by positive volumetric, piston-type displacement, extremely accurate.

CONSTRUCTION: Designed and built to withstand the severe requirements of continuous barreling service.

CAPACITY: 50 gallons per minute (maximum).

PRESSURE: Meters are tested under 50 pounds pressure. However, a maximum of 10 pounds at the meter will give the necessary speed in delivery.

FINISH: Aluminum bronze paint.

PRE-DETERMINED QUANTITY MECHANISM: By manipulation of quantity selector, it may be set to deliver any one of the three quantities which it is designed to dispense; automatically stops flow when quantity for which it has been set has been discharged. Flow may be stopped instantly at any time and mechanism returned to starting position.

CONTINUOUS COUNTER: Records in gallons to 100,000 and automatically repeats. Cannot be set back.

TEMPERATURE AND SPECIFIC GRAVITY ADJUSTMENT DIAL: Chart furnished to show proper setting of dial. Dial may be rotated and set to compensate for various temperatures and specific gravities of liquids. Correction made on basis of 60° F.

DISCHARGE CONTROL: Opens valve and starts flow of liquid; closes automatically when pre-determined quantity has been discharged.

SHUT-OFF TRIP LEVER: Disengages shut-off arm and stops flow of liquid instantly at any time. Setback knob permits pre-determined mechanism to be returned to starting position.

HOSE: 1½ inch size, 42 inches long, complete with couplings. (Furnished with Figure 766-A Unit only.)

NOZZLES: Figure 766-A Unit is furnished complete with 1⅝-inch diameter nozzle for filling containers with small openings and one 2⅛ inches in diameter for larger openings.

NOZZLES: Figure 766 Discharge Assembly fitted with short nozzle for filling 50 and 55 gallon drums; longer tipped detachable nozzle for filling 30 gallon drums fits over short one.

SWING JOINT: Enables entire unit to be swung in a complete circle of 360 degrees for most convenient operation.

INLET AND DISCHARGE PIPES: 1½-inch size.

SHIPPING WEIGHT: 150 pounds (approximate).

DIMENSIONS:

	Fig. 766	Fig. 766-A
Width over all	24½"	27½"
Distance from top of inlet pipe to inlet of meter	17"	17"
Distance from top of inlet pipe to bottom of adjustment dial	28½"	28½"
Height overall with short nozzle tip lowered	31"	
Height overall with long nozzle tip lowered	35"	

EQUIPMENT FURNISHED AT EXTRA COST

***FIGURE 730 STRAINER:** For removing any foreign matter from liquid thus protecting pump and meter. See Figure 730 Bulletin.

FIGURE 753-C AIR CHAMBER AND AIR RELEASE: For effectively removing and releasing any air in liquid, thus assuring correct registration of measuring unit; also absorbs impact pressures, essential where pump is used to deliver liquid to measuring unit. See Figure 753-C Bulletin.

***PORTABLE CARRIAGE:** Figure 281 for mounting Figure 766-A only.

**Note: For complete information on these items see Bulletin.*

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XACTO METER

(One-Quantity Pre-Determined)

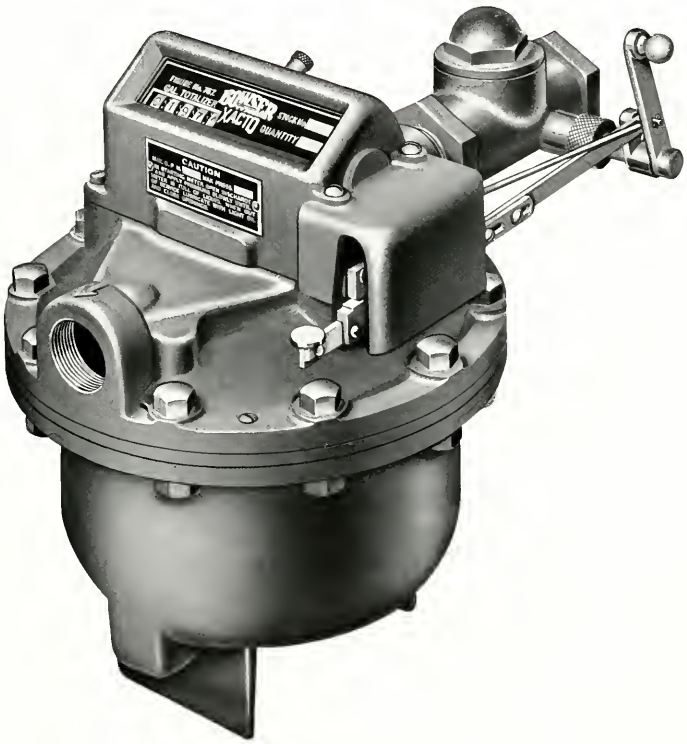

FIGURE 767

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FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

XACTO METER

FIGURES 767 and 768

BOWSER Figure 767 Xacto Meter is an automatic, pre-determined measuring device especially designed for repeatedly measuring, discharging and recording one fixed quantity of liquid.

With this device, it is easily possible to deliver one specific quantity repeatedly, from storage tank, through the measuring device, into the receptacle—accurately, speedily—in one complete operation. It is only necessary to place the nozzle in the receiving container, and engage the discharge control lever on the meter. This opens the discharge valve and starts the flow of liquid. When the pre-determined quantity has been discharged the valve automatically closes. The speed of delivery is very rapid, depending on the amount of pressure at the meter, as explained hereinafter. Measurement is accurate to a high degree—guaranteed to be well within all legal tolerances.

This type of equipment effects a great saving in time, labor and expense in the measurement of liquids in one-quantity deliveries. It eliminates guesswork, measuring cans and funnels, spillage and waste. Its positive automatic operation will increase production, cut production costs and at the same time give an accurate record of the total number of gallons of liquid handled through the meter. Readings of the counter mechanism may be taken at any time. This mechanism records up to 100,000 gallons and repeats. In this way liquid consumption records are greatly simplified, and accurate perpetual inventory records are maintained.

Figure 767 has a special field of usefulness in filling compounding and blending tanks and other receptacles. It is also well adapted for the delivery of various liquids as required in industries where mixing and similar operations are involved in the manufacture of oils, paint and varnish, etc. It is an ideal unit for measuring pre-determined quantities of gasoline, lubricating oil and light greases, into tanks, crankcases, transmissions, etc., on automobile assembly lines. In fact, it is indispensable wherever identical quantities of liquids are to be repeatedly delivered, accurately measured and recorded—all automatically.

The well known Bowser Xacto Meter is the measuring and recording unit of this outfit. Xacto is a volumetric displacement (piston-type) meter, which operates and measures the liquid by positive mechanical displacement. Regardless of the speed of flow, whether fast or slow, the measurement is by actual volume displacement, therefore always the same—accurate under all conditions of service.

Figure 767 is furnished standard in $1\frac{1}{2}$" and 2" pipe line sizes. These meters are capable of maximum delivery speeds of 50 and 110 gallons per minute, respectively. They can be constructed to deliver any one quantity from 1 quart to 100 gallons or more, in multiples of quarts from 1 quart to 5 gallons; multiples of $\frac{1}{2}$ gallons from 5 gallons to 25 gallons; multiples of gallons from 25 gallons to 50 gallons; and multiples of 5 gallons from 50 gallons to 100 gallons. Wherever quantities other than those listed above are required the matter should be submitted to our Engineering Division for consideration and approval as to practicability.

While this type of measure can be operated by gravity or pump pressure, it is

usually installed where the liquid flows by gravity. In either case, the discharge is controlled at the meter. The maximum pressure should never exceed 50 pounds at the meter. Under average operating conditions a 4 to 8 pound pressure, which is the equivalent of a 10 to 20 foot head, will give the necessary speed in delivery and insure efficient operation.

When pump pressure is used to deliver the liquid to the meter, the pump must be equipped with a by-pass so that the liquid is by-passed around the pump or back to the tank when the discharge valve at the meter is closed, and until the pumping unit is shut off.

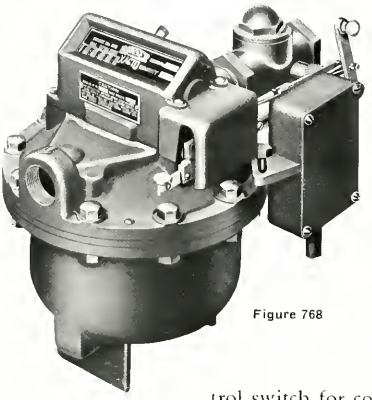

Figure 768

One pumping unit or gravity supply line may be utilized in distributing liquid to one or more discharge points, located at a considerable distance.

To operate this outfit, is a very simple and easy matter. Engaging the discharge control handle opens the discharge valve and starts the delivery of a pre-determined quantity of liquid. When this has been delivered the valve automatically closes and flow ceases.

If, after the discharge control lever has been engaged, it is desired to stop the flow of liquid quickly, before the pre-determined quantity is discharged, it is only necessary to trip an auxiliary control lever which is located at a convenient point on the meter, near the counter mechanism.

The entire unit is ruggedly constructed to withstand constant, severe service. There is very little wear on the moving parts, and barring mechanical injury from outside sources, it should give years of dependable, uninterrupted service.

FIGURE 768 ONE-QUANTITY METER WITH REMOTE CONTROL SWITCH

Figure 768 provides the same service as the Figure 767, and in addition it is equipped with an electric remote control switch for controlling the pumping unit. This outfit is especially suited for use where automatic control of the pumping unit is required or desired.

It is designed for operation by pump pressure only. Operation is started by merely engaging the discharge control lever. This opens the discharge valve and at the same time operates the switch on the meter which closes the electric circuit and starts the motor and pump. When the pre-determined quantity has been discharged the valve automatically closes, simultaneously breaking the electric current and stopping the motor and pump. The entire operation of starting and stopping the pumping unit, which may be located at a distance from the supply tank and the discharge point, is automatic after the discharge valve has been opened.

XACTO METER

FIGURES 767 and 768

Specifications

STANDARD EQUIPMENT

The meters are furnished in 1 1/2" and 2" pipe line sizes. The capacities of these meters are 50 and 110 gallons per minute respectively. They can be constructed to deliver any one quantity, from one quart to 100 gallons, within the limits given in the table below.

Multiples of quarts, from 1 quart to 5 gallons.

Multiples of half-gallons, from 5 gallons to 25 gallons.

Multiples of gallons, from 25 gallons to 50 gallons.

Multiples of five gallons, from 50 gallons to 100 gallons.

Other intermediate quantities and quantities over 100 gallons can be furnished but when required should be submitted for consideration and approval.

MEASURING UNIT: Bowser Xacto Meter

MEASUREMENT: Positive, volumetric (piston-type) displacement

TOTALIZER: Records in gallons to 100,000 gallons and repeats automatically. Cannot be set back.

PRE-DETERMINED QUANTITY MECHANISM: Automatically disengages discharge control lever when pre determined quantity has been discharged.

DISCHARGE VALVE: Brass, poppet type, spring closing. Located on inlet side of meter.

DISCHARGE CONTROL LEVER: Opens valve when engaged and starts flow of liquid. Closes automatically when pre-determined quantity has been discharged.

SHUT-OFF TRIP LEVER: Disengages shut-off arm and stops flow quickly, at will of operator.

PRESSURE: 50 pounds (maximum).

CONSTRUCTION: Designed and built to withstand the severe requirements of continuous service.

FINISH: Black enamel.

Equipment Furnished at Additional Cost

Hose and Nozzles. Suitable lengths of flexible, metal-lined hose with either a self-closing or open type nozzle attached, can be furnished for conveying the liquid from the outlet of the meter to the filling point. A Bowser spring-loaded (wet hose type) check nozzle is recommended for service with the Figure 767 and 768.

*Air Release, Figure 753-C.

*Strainer, Figure 730.

Self-Starter.

Transformer.

*Power Pump, Figure 1709.

*For complete information on above items see bulletins.

Pipe Size Inches	Maximum Capacity G.P.M.	Length Overall Inches	Width Overall Inches	Height Overall Inches	Shipping Weight Pounds
1 1/2"	50	18 1/8	12 5/8	14 5/8	135
2"	110	20 1/8	13 7/8	15 7/8	165

NOTE.—Owing to the necessity of constructing each meter especially for the one quantity desired, it will not be possible to carry them in stock, therefore shipment cannot be made immediately upon receipt of order.

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Air Release Figure 773

The Bowser Figure 773 Air Release is a device for separating any air or vapor from liquid being forced through a pipe line under pump pressure.

It is used where conditions require a full solid flow of liquid, such as to a metering device, where measurement would be affected if air was present in the liquid.

OPERATION

Upon entering the Air Release the liquid is thrown up into the chamber. The air bubbles, being lighter than the liquid, are separated and ejected through the vent in the top of the chamber.

A small continuous stream of liquid and air, if air is present, is forced through the opening in the top. As the vent line is connected back to the storage tank or into the vent line from the tank, all liquid is returned to the storage tank.

Inlet	1 1/4"
Outlet	1 1/4"
Vent	1/2"
Height	11 1/4"
Width	7 1/2"
Thickness	4"

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Combination Air Release and Strainer Figure 775

The Figure 775 is a combination air release and strainer designed for the separation and release of all air, and the removal of all dirt and other foreign matter which may be in liquid flowing through a pipe line. It is especially designed for use on tank trucks which are equipped with power "take off" and a metering device for accurately checking and recording deliveries.

When the liquid is being delivered by pump pressure to a metering device, it is necessary that all air be first removed as its presence will seriously affect the accuracy of the meter. The flow upon reaching the meter must be a solid flow of *liquid only*. And to avoid the possibility of damaging or decreasing the efficiency of the metering unit, all dirt, pipe scale and other foreign particles must be removed. The Figure 775 exactly meets this dual requirement.

The Figure 775 is built in the 1½ and 2 inch pipe sizes. It is fitted with two lugs so that it may be securely bolted.

The unit is durably constructed throughout with no delicate parts or intricate mechanism to wear or get out of order. It is compactly designed to conserve space and, with body of cast aluminum, it is exceptionally light in weight. All parts are of materials which will not affect, or be affected by the liquid to be handled. The strainer screen is easily accessible for periodical removal and cleaning.

The Figure 775 is intended for installation in the pipe line between the pump and the metering device and preferably as near the meter as possible.

OPERATION

Upon entering the air release body the liquid first passes into and through a metal basket screen strainer of such design that a minimum flow restriction and maximum screening area are provided. As the liquid passes from the strainer it enters the air release chamber (the area of which is much greater than the area of the inlet to the air release body) where the velocity of the flow is greatly reduced allowing a greater interval of time for the air to separate from the liquid. The air being lighter than the liquid, rises to the top of the chamber, where it remains until a sufficient quantity has accumulated to lower the liquid level, causing the float to drop, which in turn opens the vent valve and allows the accumulated air to escape.

DIMENSIONS AND SPECIFICATIONS

Inlet and outlet size	1½ and 2 inches
Height over all	18 inches
Width over all	12 inches
Depth over all	9¼ inches
Net weight	22 pounds
Shipping weight, approx.	28 pounds

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XACTO METER

(ALL-METAL TYPE)

FIGURE 776 2" SIZE

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XACTO METER

FIGURE 776

The Figure 776 Bowser Xacto Meters are liquid measuring instruments especially designed for handling liquids requiring a meter of all-metal construction.

APPLICATION

Being constructed entirely of metal, these meters are capable of successfully handling a wide range of liquids and temperatures without any affect on their accuracy and without danger of any detrimental affect on the meter mechanism or the liquid to be handled.

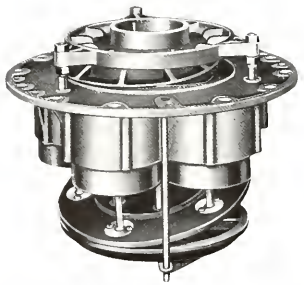
OPERATION

The Figure 776 Xacto Meter operates on the same principle of positive volumetric displacement used in the Figure 764 Xacto Meter. Within the meter are five cylinders, each fitted with a piston, the lower end of which is attached to a piston control plate. As the liquid flows into part of the cylinders, the liquid in the other cylinders is being discharged through the rotary valve. The pressure causes the piston control plate to assume a rotating motion which in turn operates the recording mechanism.

ACCURACY

Every drop of liquid which enters the meter must pass through one of the cylinders and be measured. There is no by-passing of liquid around the measuring cylinders to compensate for inaccurate calibration. On the contrary, the actual cubic capacity of the displacement cylinders themselves is altered by lengthening or shortening the piston strokes, causing a greater or lesser amount of liquid to be displaced on each cycle of operation. This is accomplished by means of a single adjusting screw. Once adjusted, its accuracy remains constant regardless of fluctuating pressures, varying temperatures and speeds of flow.

The Figure 776 is guaranteed to measure well within the legal tolerances suggested by the U. S. Bureau of Standards, the Weights and Measures Departments of every State in the Union, and by the Department of Weights and Measures of the Dominion of Canada.



INTERIOR VIEW OF 2 FIGURE 776 XACTO

Showing the all-metal construction. Cast-iron cylinder block fitted with brass cylinder liners. Pistons are of bronze. Valve and valve guide are solid bronze. Cover and bowl are made of cast-iron. Meter can be constructed of materials best suited to the liquid to be handled.

CONSTRUCTION

The metal pistons in the measuring cylinders of the meter are machined and fitted to such a fine degree of accuracy that when the liquid starts to pass through, a positive liquid seal is effected between the pistons and cylinder walls, thus preventing any slippage or leakage of liquid past the pistons and further assuring accurate measurement under all conditions of service.

Although the Figure 776 Xacto Meter is a highly perfected precision measuring instrument, like the standard Figure 764 Xacto Meter, it contains no complicated systems of clockwork nor any delicate parts to be easily broken or gotten out of order. During the time the meter is in service, the entire measuring mechanism is completely submerged in liquid, thus providing lubrication to all moving parts and forming a cushion which practically eliminates all vibration in the meter.

SIZES AND CAPACITIES

The Figure 776 Xacto Meter is built in five pipe line sizes—$\frac{3}{4}$", 1 $\frac{1}{2}$", 2", 3" and 4" with capacities ranging from 2 $\frac{1}{2}$ gallons per hour with the $\frac{3}{4}$" size to 30,000 gallons per hour with the 4" size. These meters are adapted for either gravity or pump pressure installations. See table on page 4 for general specifications.

Each meter is subjected to a thorough and rigid test before shipment to insure dependable accuracy, smoothness of operation, maximum efficiency and long service life, when operated within the meter's range of speed and operating pressures.

SPECIAL FOR CHECKING FUEL OIL BURNER CONSUMPTION

The $\frac{3}{4}$" size Figure 776 Xacto Meter is especially adapted for the measuring of fuel oil consumed by diesel engines, industrial furnaces

XACTO METER

FIGURE 776

FIGURE 776 ¾" SIZE

and lehrs and may be used with equal facility and economy wherever a meter of ¾" size of all-metal construction is required or desired.

For checking fuel oil consumption of diesel engines, industrial furnaces and lehrs, this meter is an indispensable piece of equipment. The wide range of temperature which it successfully handles is sufficient to permit any grade of fuel oil to be heated to the point of greatest efficiency. It provides an accurate means of determining the amount of oil consumed by each individual burner and for maintaining a record of total consumption. Through the use of this meter it is possible to obtain an accurate estimate of cost on each individual job and also to maintain a dependable inventory record.

The ¾" Figure 776 can be furnished to deliver a range of flows from 2½ G.P.H. to 600 G.P.H. When adjusted for a minimum flow of 2½ G.P.H. the maximum should not be greater than ten times the minimum, or 25 G.P.H. If not required to deliver a flow of less than 25 G.P.H. the meter will be adjusted to satisfactorily handle the maximum flow of 600 G.P.H.

While in most cases the ¾" Figure 776 is installed in fuel oil feed lines where the oil is supplied to the burners under pump pressure, it may also be installed in gravity feed lines, provided sufficient head pressure is available.

Owing to the variety in the grades of fuel oil used, and the consequent variations in viscosity, it is impossible to furnish definite rules with regard to the head necessary to operate the meter. In the case of a light, high-grade fuel oil, the minimum head should not be less than 4 feet, while heavier and lower grade oils will require correspondingly increased head pressures.

MAXIMUM FLOWS AND PRESSURES

The amount of liquid passing through the meters should not exceed the maximum G.P.M. capacities shown in the table on page 4. These capacities are based on pipe sizes, and maximum speeds at which the meters can be operated successfully and insure long life. The rate of flow will be dependent on the amount of head or pump pressure on the liquid, temperature and viscosity of liquid, length and size of pipe lines, and other varying installation conditions.

There are no fixed requirements which can be given for producing maximum G.P.M. capacities of Xacto Meters, due to the many different types of installations and variable conditions which must be taken into consideration.

The maximum working pressures which the Xacto Meter will withstand are 50 pounds per square inch on all sizes except the ¾" and 4" which will withstand a pressure of 200 lbs.

Ordinarily a differential of less than 10 pounds between the outlet and inlet of the meter will deliver an amount of liquid equal to the maximum flow or capacity of the meter. In making installation of the meter it should be kept in mind that the pressure on the meter should never exceed the pressure required to deliver (to the point of discharge) an amount of liquid equivalent to the maximum capacity of the meter. This will insure maximum life and reduces the possibility of abusing the metering mechanism. When pump pressure is employed to deliver the liquid through the meter, the pump must be equipped with a by-pass relief valve set to relieve pressures in excess of the amount required to deliver a flow equal to the rated G.P.M. capacity of the meter. In gravity flow installations, where the head pressure is greater than that required to deliver the maximum gallons per minute capacity of the meter, steps should be taken to reduce the pressure so as to hold the flow within the maximum flow recommended.

XACTO METER

FIGURE 776

Accessories and Variations from Standard Equipment:

There are a number of accessories which while not included in the price of the standard meter (due to variable conditions) must be added in order to insure efficient operation and to meet conditions and requirements of each individual installation

AIR CHAMBER AND AIR RELEASE. Figure 753-C. This is a device which effects the release of all air from liquid flowing through a pipe line and absorbs impact pressures which may be present in a pipe line. Its use is essential when liquid is being supplied to the meter by means of pump pressure as the air which is always present in liquid delivered in this manner would cause an incorrect registration in the meter. This air release is fully described and illustrated in the Figure 753-C Sales Bulletin and its operation and manner of installation is discussed in the Figure 753-C Installation Bulletin

COMBINATION AIR RELEASE AND STRAINER. Figure 775: This device meets the same general requirement of separating and releasing air from liquid flowing through a pipe line as the Figure 753-C except that it is equipped with built-in strainer and is designed for use with meters installed on tank trucks equipped with power "take off." It is fully described and illustrated in the Figure 775 Sales Bulletin.

PIPE LINE STRAINERS. Figure 730. This strainer protects the measuring unit against dirt, pipe scale and other foreign particles which are frequently found in liquids and which, unless removed, would be injurious to the metering mechanism. A strainer should be located in the pipe line as near the meter as practical, and on the inlet side. For complete details, see Strainer Sales Bulletin

AUTOMATIC VENT VALVE. Figure 781. This valve must be used on all gravity-operated Xacto Meter installations on tank trucks. It accelerates the speed of delivery and prevents air being drawn through the meter when the tank is nearly empty. It should be installed in the discharge line as near the meter as possible and on the inlet side. The Figure 730 Strainer is provided with a plugged opening to which it may be attached. It is completely described in the Figure 781 Sales Bulletin

Specifications

The Standard Figure 776 Xacto Meter is a complete measuring and recording device, of all-metal construction, made in ¾", 1½", 2", 3" and 4" pipe sizes.

STANDARD EQUIPMENT

CONSTRUCTION: Built of finest materials carefully constructed throughout. Interior parts all-metal, best suited to the liquids to be handled and selected for qualities of long wear and maximum service.

CHARACTERISTICS: Positive volumetric displacement type, operated by either gravity or pump pressure.

DIAL: Angular face, deeply etched, easy to read, enclosed in meter case, visible through heavy plate glass.

CONTINUOUS AND SET-BACK COUNTERS: The ¾" meter is equipped with a continuous counter which records to 100,000 gallons. It is equipped with 1/10 gallon wheel, but not with set-back counter. The 1½" and 2" sizes are equipped with continuous counters which record to 100,000 gallons—set-back counters record to 1,000 gallons and are equipped with 1/10 gallon wheel. The 3" and 4" sizes are equipped with a continuous counter which records to 1,000,000 gallons and set-back counter which records to 10,000 gallons. Set-back counter on the 3" and 4" sizes are not equipped with 1/10 gallon wheel. All counters repeat automatically. Continuous counters cannot be set back. Set-back counters may be set back to 0 at any time. Counter wheels are white with deeply etched black numerals.

LOCKING COVER: The continuous counter on all sizes except the ¾" is equipped with a cover which can be locked over figures so that readings are available only to those holding keys.

DIAL AND COUNTER POSITION: The dial and counter mechanism on all sizes except the ¾", are designed so that they may be readily turned to face any one of eight positions, thus facilitating the reading of counters from any angle.

FINISH: Black enamel

EQUIPMENT FURNISHED AT EXTRA COST

*Air Chamber and Air Release, Figure 753-C.
*Combination Air Release and Strainer, Figure 775.
*Pipe Line Strainer, Figure 730.
*Automatic Vent Valve, Figure 781

(For complete information on items marked "*" refer to individual bulletins).

GENERAL SPECIFICATIONS

Pipe Size Inches	Maximum Capacity G.P.M.	Maximum Pressure Pounds	WEIGHT IN POUNDS Net	WEIGHT IN POUNDS Packed	Diameter Inches	Height Inches
¾	10	200	25	45	7	11¾
1½	50	50	105	130	12½	17
2	110	50	175	205	13⅞	17⅞
3	250	50	295	390	19	22½
4	500	200	1050	1050	30¼	34½

The 3" and 4" meters are fitted with flanged unions. All other sizes have female connections

An Xacto Meter DATA SHEET must be filled out and sent in with each order so that we may immediately determine the correct meter specifications, and thus avoid delay in shipment and insure satisfactory operation in actual use.

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XACTO METER

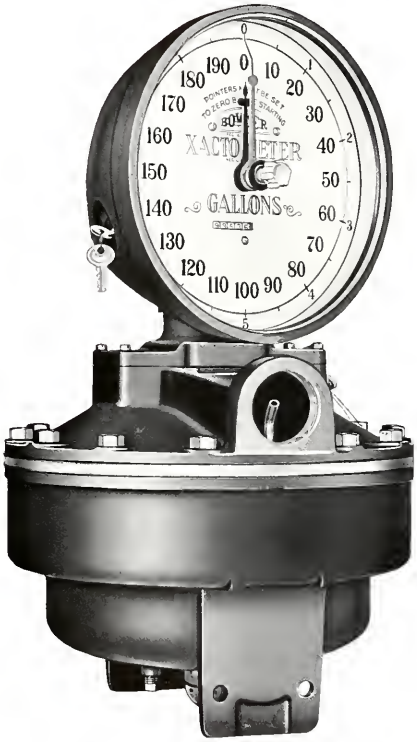

Figure 778

VERTICAL DIAL ON A FULL SWIVEL MOUNTING VIEW SHOWS 10" DIAMETER, 200-GALLON DIAL METER MADE IN 1 1/2", 2", 2 1/2" AND 3" PIPE SIZES

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

The Figure 778 Bowser Xacto Meter is equipped with a large vertical recording dial of sufficient size to be easily read by an operator controlling the flow of liquid at a remote point of discharge. The dial is mounted on a swivel so that it may be easily turned to face any desired direction to facilitate observation.

This meter is especially designed and adapted for measuring and recording tank truck deliveries of petroleum products. It is exceptionally popular and widely used on domestic fuel oil delivery trucks and is rapidly gaining favor as the ideal method of checking and speeding up tank truck deliveries of gasoline. It may also be used with equal facility and economy wherever it is desired or required to take accurate meter readings of liquid measurements at a remote point of discharge.

Side view of dial showing "full swivel" mounting. Dial may be turned to face any desired direction.

When installed on a tank truck, the Figure 778 Xacto Meter effects a host of advantages and economies, outstanding among which are the following:

1. Accurate, visible "sealed-meter" readings build customer confidence and good-will. No arguments or disputes regarding quantity delivered.

2. Reduced delivery costs. Speedier service. Fixed routing made possible by assuring accurate deliveries of any size dump. Less equipment required. Costly multiple compartment tanks, backtracking and bucketing are eliminated.

3. Complete, accurate check on individual deliveries and total output. Simplified record-keeping. Dependable, fool-proof. Loading figures verified. Tank capacities checked.

4. No losses due to over-measure. No guesswork. Every gallon accurately and fully accounted for.

The Figure 778 is made in four pipe sizes—$1\frac{1}{2}$", 2", $2\frac{1}{2}$" and 3", with capacities of 50, 110, 180 and 250 gallons per minute respectively (see table below.)

The Figure 778 may be furnished standard with either a 7" or 10" diameter single-faced dial. To meet widely varying requirements these dials may be graduated as follows: the 7" in single gallons from 1 to 20—in multiples of 5 gallons up to 100—in multiples of 10 gallons up to 200 or in multiples of 20 gallons up to 400; the 10" the same as 7" and in addition in multiples of 50 gallons up to 1000, and multiples of 100 up to 2000 gallons.

The $2\frac{1}{2}$" and 3" sizes will be furnished with 10" diameter dial graduated in multiples of 50 gallons up to 1000, and multiples of 100 gallons up to 2000.

The dial is glass-covered and plainly stamped with large numerals and graduations. Dial hands operate clockwise and may be set back to zero at any time. On the 100-gallon dial, for example, the large hand (painted red) makes one complete revolution of the dial for each 5 gallons discharged—the small hand (painted black) advances to the next 5-gallon graduation when the large hand has made the complete revolution. The large numerals indicate gallons in 5 gallon multiples—the small numerals indicate single gallons—the graduations on the outer edge indicate quarts.

The dial is provided with an opening through which the figures of a continuous gallon counter are clearly visible. This counter maintains a continuous and accurate record of the total number of gallons dispensed—recording to 1,000,000 gallons and repeat. The opening is provided with a shutter which may be locked to conceal counter figures.

Measurement is accomplished by positive volumetric displacement—accurate under all conditions of service. Xacto Meter's accuracy is guaranteed to be well within strictest legal tolerances.

With the amplified visibility afforded by the large recording dial—and the unfailing accuracy insured by Xacto Meter—liquid measuring, recording and dispensing operations are greatly simplified—service is faster and better—deliveries are absolutely accurate—records are exact—and complete control, by one operator, is at the point of discharge. Operators may observe the flow of liquid and the registration on the dial simultaneously.

The meter is attractively finished in aluminum bronze paint and constructed of highest quality materials for a long life of satisfactory service.

For complete details on Xacto operation, accuracy, construction, etc., see Figure 764 Bulletin.

EQUIPMENT FURNISHED AT EXTRA COST

There are a number of accessories which while not included in the price of the standard meters (due to variable conditions) must be added in order to insure efficient operation and to meet conditions and requirements of each individual installation.

AIR RELEASES: For installation on inlet side of meter to remove all air that may be in the line.

***PIPE LINE STRAINERS:** To prevent dirt or other foreign matter from entering the meter and interfering with its efficiency.

NOTE: For complete details on items marked (*) see individual bulletins.

SPECIFICATIONS

Size	Height Over All		Width Over All	CAPACITIES		Shipping Weights Lbs. Approximate
	7" Dial	10" Dial		Maximum Gallons Per Minute	Maximum Pounds Pressure	
$1\frac{1}{2}$"	$22\frac{5}{16}$"	24"	12"	50	50	150
2"	$24\frac{3}{16}$"	$25\frac{3}{4}$"	14"	110	50	190
$2\frac{1}{2}$"		$26\frac{3}{8}$"	19"	180	50	335
3"		$26\frac{3}{8}$"	19"	250	50	425

The 3" meter is fitted with flanged unions. All other sizes have female connections.

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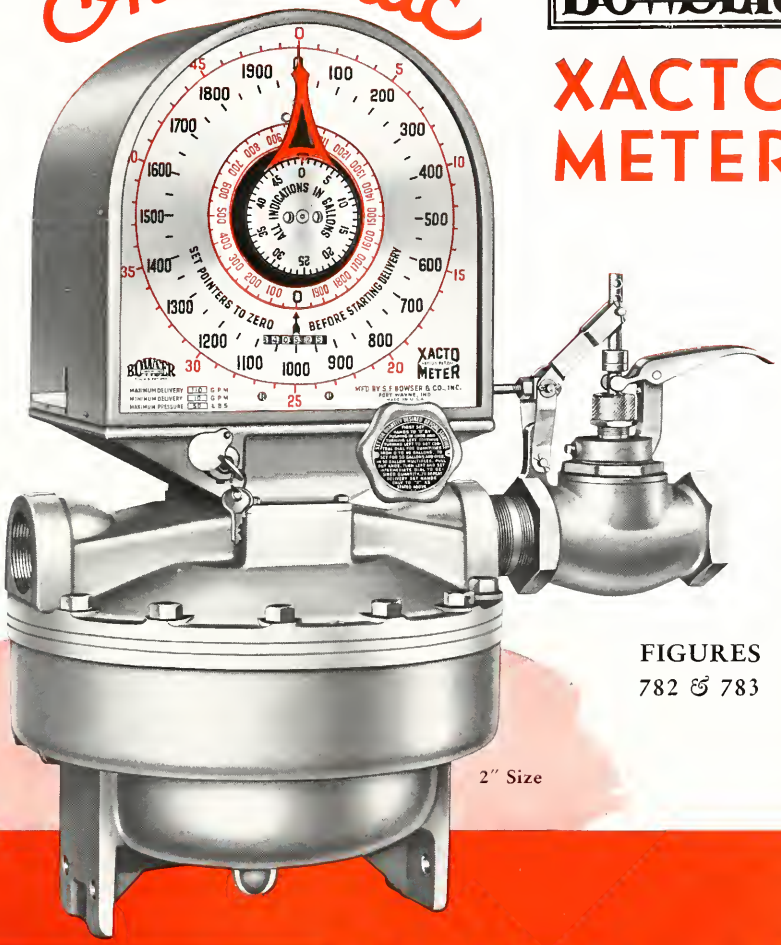
XACTO METER



FIGURES
782 & 783

2″ Size

S. F. BOWSER & COMPANY, INC.
FORT WAYNE, INDIANA, U.S.A.

AUTOMATIC XACTO METER

Figures 782 and 783

The New Bowser Figure 782 Automatic Xacto Meter embodies a revolutionary principle in "quantity pre-determining mechanism" and an extremely simple "one-knob-control" feature, representing the greatest advancement yet made in automatic meter design and construction.

This New Automatic Unit is especially designed and adapted for use on fuel oil and range oil delivery trucks, in which service automatic, accurate deliveries of any quantity desired, to remote filling points, is of valuable aid to the oil marketer. It is also ideally suited for use at bulk plants for accurate, automatic measurement of gasoline and heating oils and is extremely useful and beneficial wherever automatic, accurate deliveries of pre-determined quantities are desired or required.

The New Bowser Automatic is capable of being set for automatically measuring and delivering any pre-determined quantity, in even gallons, from 1 to 2000, with positive assurance that the quantity delivered is the exact quantity set for.

It incorporates a large easily-read dial for the Customer and two simple, easily-set, positive action dials for the Operator—one for quantities from 1 to 49 gallons and the other for quantities from 50 to 2000 gallons in 50-gallon multiples. Its simplified control, amplified visibility, positive operation and constant accuracy are features of extraordinary importance to oil marketers.

EXTREME SIMPLICITY

All the operator needs to do is set the dials for the exact quantity to be delivered, open the control valve and when the pre-determined number of gallons have been discharged, the meter automatically shuts off the flow. Thus, in making deliveries of range oil or fuel oil to points remote from the truck, with the dial out of sight, *one man* can easily and efficiently do the work which formerly required two men, do it accurately, in much less time and with greater customer satisfaction.

Its simple, positive, automatic operation will noticeably speed up deliveries, reduce delivery costs, build and hold customer-confidence and at the same time provide an accurate and reliable record of each delivery and a complete check on total sales.

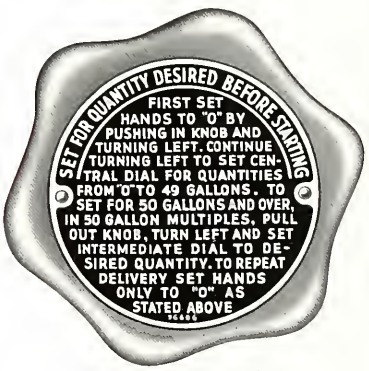
ITS NOTABLE ADVANTAGES ON TANK TRUCKS

By making possible accurate, automatic deliveries of any size quantity this unit enables the establishment of fixed delivery routes—eliminates cumbersome, costly bucketing — reduces the amount of equipment formerly required and obviates the necessity of expensive multiple compartment tanks.

It eliminates losses due to over-measure, carelessness and possible dishonesty. There is no guesswork—no arguments or complaints—no chance for loss of good-will due to questionable quantities delivered. A full measure on every delivery and a full accounting of all deliveries is your assurance of maximum profit.

AT BULK PLANTS

At the bulk plant, the Automatic Xacto saves considerable time in truck filling operations. It eliminates the losses due to overfilling caused by "eye-measurement". It insures accurate withdrawals and a complete, reliable, fool-proof check on total bulk output. Simplifies record-keeping and speeds up service.



Actual Size Reproduction

THIS LARGE CONTROL KNOB SETS ALL THREE DIALS

This one big and conveniently located knob controls the setting of all three dials. It can be turned as easily, readily and accurately by a gloved hand as by a bare one. It is always turned in the same direction—to the left. Complete instructions for setting are shown plainly etched on the small plate.

AUTOMATIC XACTO METER

Figures 782 and 783

small central pre-determining dial from 16 to 25, then return the intermediate dial to "0" and advance it to 200.

If the quantity of 416 gallons is to be changed to, say, 510 gallons, you first return the Customer's Dail hands to "0", next return the small central dial to "0" and set it at 10, then advance the intermediate dial from 400 to 500.

If the quantity of 416 gallons is to be changed to, say, 35 gallons, you first return the Customer's Dial hands to "0", next advance the small central dial from 16 to 35 and then return the intermediate dial to "0."

Complete instructions for setting the dials are etched on a small plate which is located on the face of the control knob (see illustration showing actual size reproduction).

POSITIVE MECHANICAL "QUANTITY STOP SELECTOR"

To insure absolute accuracy in setting the quantity pre-determining dials, the New Bowser Automatic utilizes a positive, mechanical "quantity stop selector" which makes it possible for an operator to easily and readily set the dials to the exact gallon quantity desired, from 1 to 2000 gallons, without any chance for error and with positive assurance that the quantity set for is the exact quantity desired. The operator simply revolves the two dials to the quantity desired and the "quantity stop selector" on each dial positively locates the dial at the exact gallon quantity desired.

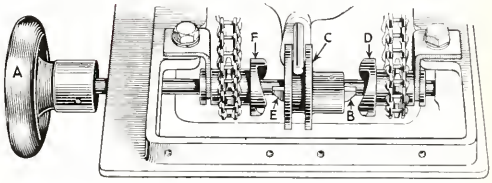
Again it will be observed, from the above, that the setting of the dials is *not* dependent upon the operator's ability to *manually* determine the setting. There is no chance for "less than" or "more-than" even-gallon deliveries. Costly errors and shortages due to over and under-measurement are positively prevented with the New Bowser Automatic.

HIGHLY ACCURATE AT *ANY* QUANTITY

If it is desired or required to deliver, say, just 1 gallon—the operator sets the small pre-determining dial on the 1-gallon graduation—the quantity stop selector automatically and positively engages the quantity pre-determining mechanism for a 1-gallon delivery—and by opening the control valve, exactly 1 gallon of liquid is discharged. In like manner, it is easily possible, without chance for error, to set the dials for *any* gallon quantity, from 1 to 2000 gallons, and insure accurate measurement of the exact quantity desired.

CONTINUOUS GALLON COUNTER

The Customer's Dial is provided with an opening through which the figures of a continuous gallon counter are clearly visible. This counter maintains a continuous and accurate record of the total number of gallons which have passed through the meter. It records to 1,000,000 gallons and automatically repeats. It is fitted with a shutter which may be locked over the figures so that they are only available to those holding keys.



SIMPLIFIED OPERATION CONTROL KNOB ALWAYS TURNS TO LEFT

Here's Why and How:

This one control knob (A) sets all three dials and is always turned to the left, making the setting extremely simple and fool-proof. No chance to set dials incorrectly. No chance for error.

By referring to the above illustration and the following description you will gain an accurate conception of why turning the knob to left *only* moves the dials and why turning to right has no effect.

When the knob (A) is pushed in, spring pawl (B) on clutch (C) engages clutch disc (D) which when turned counter-clockwise returns the customer's dial hands to "0" and sets the small central pre-determining dial to any gallon quantity, from 1 to 49.

When knob (A) is pulled out, the spring pawl (E) on clutch (C) engages clutch disc (F) which when turned to the left, or counter-clockwise, sets the intermediate pre-determining dial to any 50-gallon quantity, from 50 to 2000.

The clutch discs (D) and (F) are so constructed that when the control knob is turned clockwise (either pushed in or pulled out) the spring pawls (B) and (E) on the clutch (C) are prevented from engaging the clutch discs. The spring pawls merely pass over the notches on the discs, without affecting their movement.

BOWSER ESTABLISHED 1885

AUTOMATIC XACTO METER

Figures 782 and 783

The New Bowser Figure 782 Automatic Xacto Meter embodies a revolutionary principle in "quantity pre-determining mechanism" and an extremely simple "one-knob-control" feature, representing the greatest advancement yet made in automatic meter design and construction.

This New Automatic Unit is especially designed and adapted for use on fuel oil and range oil delivery trucks, in which service automatic, accurate deliveries of any quantity desired, to remote filling points, is of valuable aid to the oil marketer. It is also ideally suited for use at bulk plants for accurate, automatic measurement of gasoline and heating oils and is extremely useful and beneficial wherever automatic, accurate deliveries of pre-determined quantities are desired or required.

The New Bowser Automatic is capable of being set for automatically measuring and delivering any pre-determined quantity, in even gallons, from 1 to 2000, with positive assurance that the quantity delivered is the exact quantity set for.

It incorporates a large easily-read dial for the Customer and two simple, easily-set, positive action dials for the Operator—one for quantities from 1 to 49 gallons and the other for quantities from 50 to 2000 gallons in 50-gallon multiples. Its simplified control, amplified visibility, positive operation and constant accuracy are features of extraordinary importance to oil marketers.

EXTREME SIMPLICITY

All the operator needs to do is set the dials for the exact quantity to be delivered, open the control valve and when the pre-determined number of gallons have been discharged, the meter automatically shuts off the flow. Thus, in making deliveries of range oil or fuel oil to points remote from the truck, with the dial out of sight, *one man* can easily and efficiently do the work which formerly required two men, do it accurately, in much less time and with greater customer satisfaction.

Its simple, positive, automatic operation will noticeably speed up deliveries, reduce delivery costs, build and hold customer-confidence and at the same time provide an accurate and reliable record of each delivery and a complete check on total sales.

ITS NOTABLE ADVANTAGES ON TANK TRUCKS

By making possible accurate, automatic deliveries of any size quantity this unit enables the establishment of fixed delivery routes—eliminates cumbersome, costly bucketing — reduces the amount of equipment formerly required and obviates the necessity of expensive multiple compartment tanks.

It eliminates losses due to over-measure, carelessness and possible dishonesty. There is no guesswork—no arguments or complaints—no chance for loss of good-will due to questionable quantities delivered. A full measure on every delivery and a full accounting of all deliveries is your assurance of maximum profit.

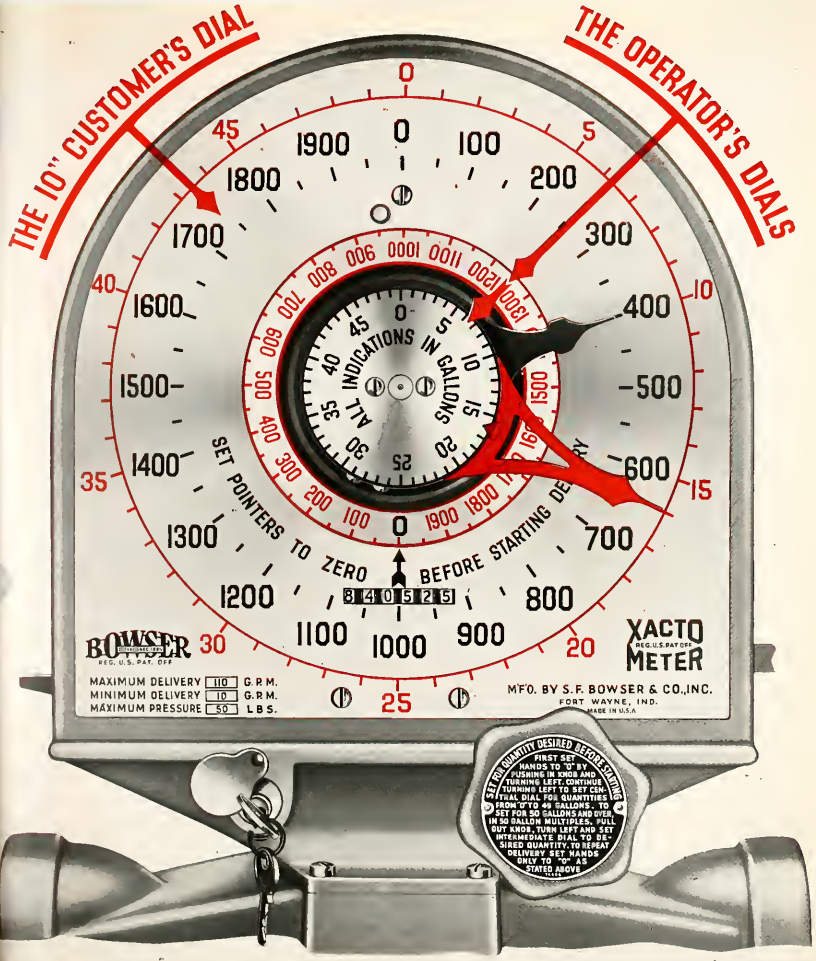
AT BULK PLANTS

At the bulk plant, the Automatic Xacto saves considerable time in truck filling operations. It eliminates the losses due to overfilling caused by "eye-measurement". It insures accurate withdrawals and a complete, reliable, fool-proof check on total bulk output. Simplifies record-keeping and speeds up service.

Actual Size Reproduction

THIS LARGE CONTROL KNOB SETS ALL THREE DIALS

This one big and conveniently located knob controls the setting of all three dials. It can be turned as easily, readily and accurately by a gloved hand as by a bare one. It is always turned in the same direction—to the left. Complete instructions for setting are shown plainly etched on the small plate.



"SINGLE-KNOB-CONTROLLED" AUTOMATIC XACTO METER DIALS

Showing position of Customer's Dial hands and Predetermining Dials at end of a 416 gallon delivery.

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AUTOMATIC XACTO METER

Figures 782 and 783

GUARANTEED ACCURACY

The Figure 782 Automatic, like all the other adaptations of the famous and original Figure 764 Xacto Meter, accomplishes its dependably accurate measurement by *positive volumetric piston* displacement—the one and only principle of liquid measurement known and proved to be accurate under all conditions of operation and service. It is guaranteed to measure well within the strictest legal tolerances.

FOOL-PROOF DIAL SETTING

Accurate setting of the pre-determining dials is not dependent upon the operator's ability to squarely "hit the mark". It is no longer necessary for an operator to exhaust his patience in manually setting a series of dials and counters.

The dials of the New Figure 782 Automatic Xacto were particularly designed to make it possible for an operator to easily, quickly and accurately set them for any desired gallon quantity, from 1 to 2000, with positive assurance that the amount set for is the exact amount that will be delivered—no more and no less.

THE DIALS DEFINED

The unit embodies an ingenious but very simple and fool-proof triple-dial mechanism consisting of a *large 10" diameter dial* which is the *customer's indication of quantity delivered*, and two smaller centrally-located dials which control the quantity pre-determining mechanism.

The 10" diameter CUSTOMER'S DIAL is graduated in single gallons and 50-gallon multiples with red numerals in multiples of 5-gallons up to 50 gallons, and with large black numerals in multiples of 100 gallons up to 2000 gallons.

The small central dial of the quantity predetermining mechanism is plainly graduated in single gallons with numerals in multiples of 5 gallons up to 50 gallons.

The intermediate dial of the quantity predetermining mechanism is graduated in multiples of 50 gallons with large red numerals in 100-gallon multiples up to 2000 gallons.

To simplify the operation of the New Bowser Automatic to the greatest possible extent, *one* large, conveniently located and easily operated control knob is utilized to set *all three* dials, and is always revolved in the same direction—counter-clockwise.

SIMPLE POSITIVE DIALS EASILY AND SPEEDILY SET

Setting the dials for any pre-determined quantity, from 1 to 2000 gallons, is a simple matter, easily and quickly accomplished by any operator, in the following manner.

To set the dials to deliver, say, 416 gallons, you first set the hands of the Customer's Dial to "0" by pushing in the control knob and turning it to the left. When the hands reach "0" they automatically and positively stop squarely on the mark. By continuing to turn the control knob to the left you revolve the small central dial of the pre-determining mechanism to the left until the pointer coincides with the "16" gallon graduation. Next, you pull out the control knob, turn it to the left, which revolves the intermediate dial of the pre-determining mechanism to the left until the arrow coincides with the "400" gallon graduation.

From the foregoing it will be noted how a large *"single knob" controls* the setting of *all three dials* and that this knob is *always turned* in the same direction, to the left or counter clockwise. Turning it to the right, or clockwise, does not move the dials or hands (see page 5). This knob automatically returns to a neutral position when released after a setting.

To start the flow, you simply press the handle of the control valve. As the flow progresses, the Customer's Dial hands advance to the right or clockwise until the exact quantity of 416 gallons has been discharged, at which point the flow is automatically stopped.

At the end of the delivery, the Customer's Dial hands indicate a delivery of 416 gallons, corresponding with the amount for which the pre-determining dials were set.

The large dial illustration shows the position of the Customer's Dial hands and the pre-determining dials at the end of a 416 gallon delivery.

TO REPEAT QUANTITIES

If the same quantity of 416 gallons is to be repeated, you simply return the Customer's Dial hands to "0" and press down on the handle of the control valve. That's all there is to do. You may repeat any "setting" as often as desired.

TO CHANGE QUANTITIES

If the quantity of 416 gallons is to be changed to, say, 225 gallons, you first return the Customer's Dial hands to "0", next advance the

AUTOMATIC XACTO METER

Figures 782 and 783

SIZES, CAPACITIES AND CONSTRUCTION

The Figure 782 is made in three sizes—$1\frac{1}{2}$", 2" and 3", with capacities of 50, 110 and 250 gallons per minute respectively, see table below. It is attractively finished in aluminum bronze paint with control valve of brass. It is constructed throughout of highest quality materials and is especially adapted for a long life of tank truck and bulk plant service.

To accommodate various mounting and installation requirements, this unit can be furnished with dial mounted as shown in illustration on the cover of this booklet, with the control valve located at the right side of the dial (right hand assembly) or turned 180 degrees with control valve at left of dial (left-hand assembly). The control valve is always located on the inlet side of the meter. Meters are available only with face of dial parallel with line of flow. Orders must specify type of mounting desired, either right or left-hand assembly.

THE CONTROL VALVE

The control valve is positive in its function of instantly stopping the flow when the quantity for which the pre-determining mechanism was set has been discharged. It is durably constructed of materials best suited for the requirements.

When furnished with the 3" size Meter, this valve is specially constructed with a mechanism which automatically decreases the speed of flow during delivery of the last 50 gallons of the quantity for which the pre-determining mechanism was set. This decrease in flow speed prevents high impact pressures on the lines. Further details of construction and operation are contained in the Figures 782 and 783 Installation-Operation Bulletin.

FIGURE 783

The Figure 783 Automatic Xacto Meter embodies the same operating features and advantages, is made in the same sizes as the Figure 782, but being constructed *entirely* of metal is especially designed and adapted for successfully handling a wide range of liquids and temperatures without any effect on its accuracy and without danger of any detrimental effect on the meter mechanism or the liquid to be handled.

For complete details on Xacto Meter Operation, construction and detailed specifications, refer to Bowser Figures 764 and 776 Sales Bulletins.

EQUIPMENT FURNISHED AT EXTRA COST

AIR RELEASES: For removal of all air that may be in the lines.

PIPE LINE STRAINERS: To prevent dirt or other foreign matter from entering the meter and interfering with its efficiency.

For complete details, refer to Bowser Bulletins, Figures 753-C, 775 and Pipe Line Strainers.

Specifications

Size	Height Overall		Width Overall		Diam. of Meter Bowl		Capacities		Net Weights Lbs. Approximate		Shipping Weights Lbs. Approximate	
	Fig. 782	Fig. 783	Fig. 782	Fig. 783	Fig. 782	Fig. 783	Max. G. P. M.	Max. Lbs. Press	Fig. 782	Fig. 783	Fig. 782	Fig. 783
$1\frac{1}{2}$"	$24\frac{5}{8}$"	27"	$19\frac{3}{4}$"	$19\frac{3}{4}$"	$12\frac{1}{8}$"	$12\frac{1}{8}$"	50	50	100	125	130	180
2"	$25\frac{1}{4}$"	$27\frac{5}{8}$"	$20\frac{5}{8}$"	$20\frac{5}{8}$"	$13\frac{7}{8}$"	$13\frac{7}{8}$"	110	50	125	155	155	215
3"	$29\frac{1}{2}$"	$32\frac{1}{8}$"	$35\frac{1}{2}$"	$35\frac{1}{2}$"	19"	19"	250	50	305	385	410	490

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TANK TRUCK METERING UNIT

FIGURE 787

Outside front view of the Bowser Figure 787 Tank Truck Metering Unit for mounting on Fuel Oil and Range Oil Delivery Trucks. A complete, compact system, easily and inexpensively installed.

S. F. BOWSER & COMPANY, INC.
FORT WAYNE, INDIANA, U. S. A.

TANK TRUCK METERING UNIT

FIGURE 787

The Bowser Figure 787 Tank Truck Metering Unit is a complete, compact, moderately priced, self-contained, cabinet-type outfit designed especially for easy and inexpensive installation on fuel oil and range oil delivery trucks, equipped with power take-off.

This outfit consists of a 1¼" Bowser Xacto Meter fitted with a large 10" diameter 100-gallon delivery dial, a Figure 775 cast-iron combination air release and strainer and a check valve, all completely assembled, compactly and securely mounted inside a dust- and waterproof steel cabinet of small and neat proportions. It is complete in itself and ready for operation immediately after connection to the oil and vent lines. It is built in the 1¼" size with a maximum capacity of 25 gallons per minute.

MEASURING UNIT

The Xacto Meter used in this outfit is the same measuring instrument which is now successfully serving many thousands of oil marketers throughout the world. It became famous in the oil industry almost a decade ago by virtue of its dependable accuracy under all conditions of service.

Xacto Meter measures the liquid by positive volumetric piston displacement which assures the highest possible degree of accuracy, well within Sealer's strictest tolerances, even when operating under the most severe conditions. Whether the liquid is being delivered fast or slow, with pressures fluctuating from 1 to 15 pounds or more, Xacto Meter provides the same consistent accuracy always.

AIR RELEASE

Xacto Meter's accuracy is further guaranteed under all conditions of operation and installation by the Bowser Air Release located on the inlet side of the meter. This device removes all entrained air from the liquid before it passes through the meter, thus assuring a solid flow of liquid only to the meter and preventing the inaccuracies which would be caused by the presence of air. A drain plug, located at the bottom of the air release, which permits draining the liquid, is accessible through an opening in the bottom of the cabinet.

The strainer, located inside the body of the air release, at the inlet, prevents dirt and other foreign particles, which may be in the liquid, from entering the air release and meter mechanism. The screen of the strainer is easily accessible from the outside of the box for periodical removal and cleaning.

LARGE DIAL

A 10" diameter, glass-covered, counter-clockwise dial, which indicates to both the customer and driver the exact quantities delivered, from 1 to 100 gallons, is fitted into the front side of the metal cabinet from which point its readings are clearly visible at a distance. The large red hand makes one revolution for each 5 gallons. The small black hand totals the number of gallons delivered.

The large numerals indicate gallons, in 5-gallon multiples—the small numerals indicate single gallons—the graduations on the outer edge indicate quarts.

SET-BACK KNOB

A knurled knob for setting the dial hands back to "0" whenever desired is conveniently fitted on the side of the cabinet, nearest the meter.

GALLON TOTALIZER

A continuous gallon counter, built into the face of the dial, maintains an accurate record of the total number of gallons delivered. It records to 100,000 gallons and repeats automatically. It cannot be set back. This counter forms the basis for an exact, complete and foolproof check on total gallons sold or delivered. At the end of the day, you need only look at the counter to know instantly the exact number of gallons to be accounted for.

SIMPLE INSTALLATION

Bolting holes, located at both ends in the top and bottom panels of the cabinet, provide for mounting the outfit either on top of or below the can rack, or in a rear or side compartment, wherever most convenient from an installation and operation standpoint.

Port holes, of suitable dimensions, are provided in both ends, at the top part of the cabinet to facilitate making connections to the meter and air release discharge lines and to en-

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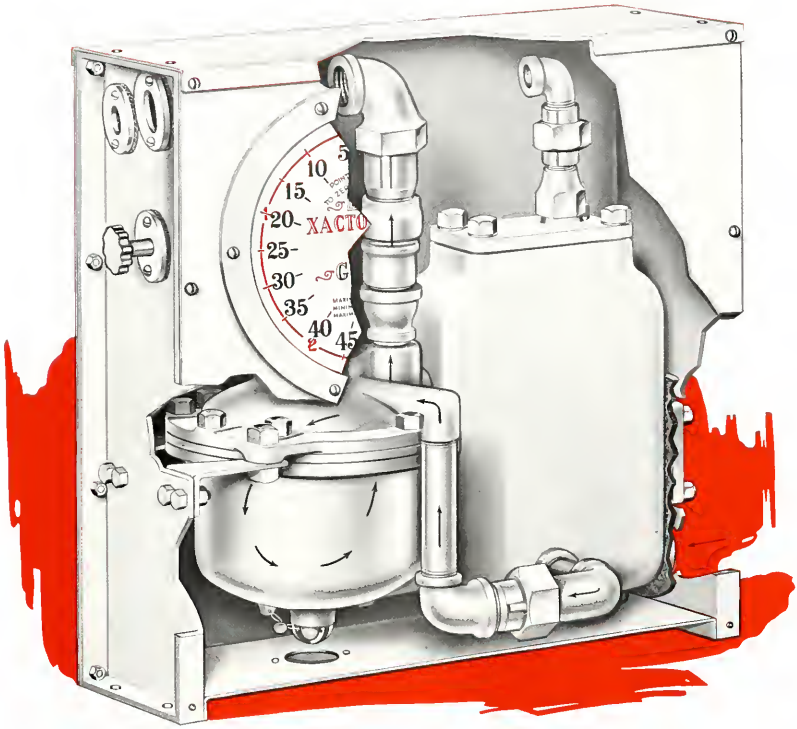
TANK TRUCK METERING UNIT

FIGURE 787



View of Figure 787 Tank Truck Metering Unit with front panel cut away to show location and assembly of Xacto Meter, Air Release, etc. A compact, sturdy, accurate system especially designed for fuel oil and range oil delivery service. Made in 1¼" size with capacities of from 20 to 25 gallons per minute.

BOWSER ESTABLISHED 1885

TANK TRUCK METERING UNIT

FIGURE 787

able running the liquid discharge line and vent line in the direction best suited to the individual requirements. Refer to table below for sizes of bolting holes, port holes, etc.

To further facilitate installation of the outfit, the discharge line from the meter and the vent line from the air release inside the cabinet terminate in union ells to which the pipe lines may readily be attached.

A port hole, of ample size, is also provided in the bottom of the cabinet, at a point directly below the center of the meter, to allow access to the meter adjusting screw.

RAIN- AND DUST-PROOF

The cabinet is designed to protect the equipment inside against rain, sleet, snow, dust, etc. Properly retained felt washers are provided at all openings where equipment or pipe lines pass through the cabinet.

Front and back plates of the cabinet are attached by means of nickel-plated screws and bolts so that access to interior parts may be readily gained when desired.

A back-pressure check valve is located in the discharge line from the meter to insure correct operation of meter and air release under all operating conditions.

The entire outfit, outside and inside, is finished in aluminum bronze paint. It is especially constructed for tank truck service and with ordinary care will render many years of satisfactory and uninterrupted service.

IMPORTANT ADVANTAGES

This small, inexpensive outfit offers the marketer of fuel and range oil many worthwhile advantages, chief among which are the following:

1. A complete, compact, low-cost outfit especially designed for easy, simple installation.

2. "Sealed-Meter" measure helps you gain, build and hold your customer's confidence. Attracts business and increases profits.

3. Reduces delivery costs by enabling deliveries to be made quicker, with less help and equipment.

4. Enables the delivery of any quantity, accurately, in less time.

5. Eliminates arguments and disputes about quantity delivered. Insures customer confidence and good-will.

6. Prevents damage to and soiling of lawns, driveways, sidewalks, stairways, floors, etc. Eliminates costly, sloppy bucketing.

7. Stops losses and shortages caused by otherwise unavoidable over-measurement, carelessness and dishonesty.

8. Xacto Meter insures full measure to every customer—provides a visible, fool-proof record of exact quantity delivered.

9. Xacto - Meter - Measure protects your liquids and profits against all sources of loss. Gives you a positive check on each and every sale—a complete, dependable record of all your deliveries.

10. Xacto Meter is simple and rugged in construction. It is approved by Sealer's of Weights and Measures everywhere. It is your guarantee of full profit.

SPECIFICATIONS

Height, overall	23¾"
Width, overall	13"
Length, overall	22⅝"
Size openings (one each end) for oil discharge pipe	1¾"
Size openings (one each end) for vent pipe	1 3 16"
Size openings (four top and bottom) for bolting to truck	½"
Net weight, pounds	188
Shipping weight, approximate, pounds	233

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Xacto Can Filling Units

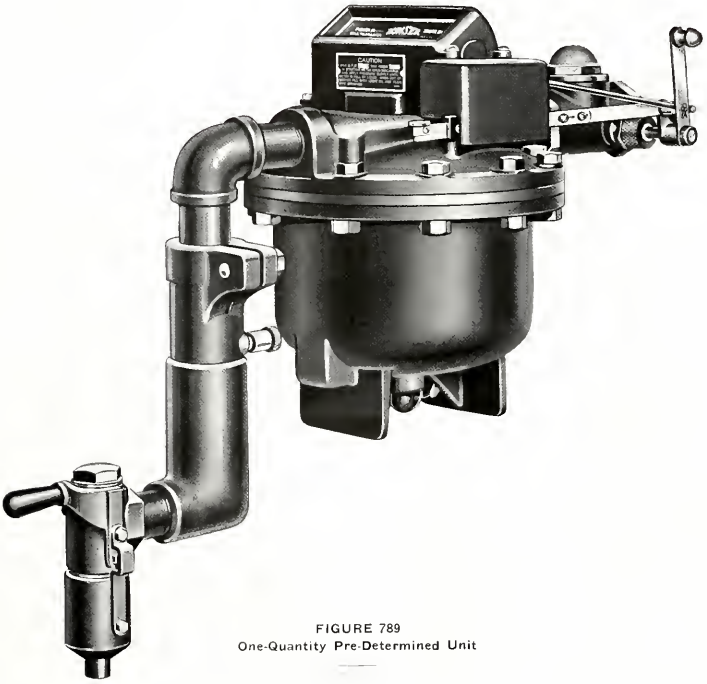

FIGURE 789
One-Quantity Pre-Determined Unit

FIGURE 790
Three-Quantity Pre-Determined Unit
Same as above except equipped with three-quantity selector

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FORT WAYNE, INDIANA, U. S. A.

TORONTO LONDON BERLIN PARIS ROTTERDAM

Xacto Can Filling Units

FIGURE 789 ONE-QUANTITY PRE-DETERMINED

The Bowser Figure 789 is especially designed and adapted for automatically measuring, recording and discharging any one pre-determined quantity of liquid into cans or other small containers.

With this simple, automatic device the filling of cans with the same pre-determined quantity of liquid in each can is accomplished quickly, accurately and economically—without spilling, or soiling the cans in the least. It can be furnished to deliver any one fixed quantity, within the range of quantities shown under CAPACITIES.

Operation of the unit is a simple matter—practically automatic. It is only necessary to place the nozzle in the container and engage the discharge control lever. This opens the discharge valve and starts the flow of liquid. When the pre-determined quantity has been discharged, the valve automatically closes and stops the flow. The speed of delivery is very rapid—the unit is capable of handling 25 G.P.M. with a degree of accuracy well within the tolerances prescribed by the Bureau of Standards.

The Xacto Can Filling Unit effects a big savings in time, labor and expense—eliminates costly guess-work, spillage and waste. Its positive automatic operation increases production, cuts filling costs and assures a complete accurate record of the total number of gallons of liquid packaged. The counter mechanism of the unit records in gallons to 100,000 and repeats (it cannot be set back). Thus liquid packaging records are greatly simplified, losses are stopped and accurate records are constantly maintained.

SIZE AND CAPACITIES

The Figure 789 is made in the 1 ¼" size, with a maximum delivery speed of 25 G.P.M. It can be constructed to deliver any one quantity from 1 quart to 100 gallons, or more, in multiples of quarts from 1 quart to 5 gallons; multiples of ½ gallons from 5 gallons to 25 gallons; multiples of gallons from 25 to 50 gallons; and multiples of 5 gallons from 50 to 100 gallons. When quantities other than the foregoing are required the matter should be submitted for consideration.

BOWSER XACTO MEASURING UNIT

The Figure 789 Can Filling Unit incorporates the well known Bowser Xacto Meter for the accurate measurement and recording of the liquids. Xacto Meter is a volumetric displacement measuring instrument that measures the liquid by positive piston displacement. Regardless of the speed of flow, whether fast or slow, constant or intermittent, the measurement is by actual volume displacement—always the same—accurate under all conditions of service.

DISCHARGE ASSEMBLY

The measuring unit is equipped with a complete discharge assembly. This assembly is adjustable by means of a sliding tube mechanism which permits raising or lowering it about 5 inches to accommodate filling cans of various heights. The nozzle may be adjusted by means of a lever which raises and lowers it about 1 inch to provide ample clearance for placing cans into position underneath and to permit dropping the nozzle into the fill opening of the can.

DISCHARGE CONTROL VALVES

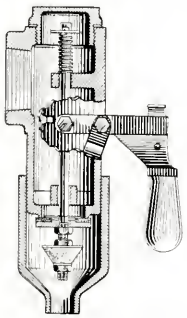
Engaging the discharge control lever opens the discharge control valve, located on the inlet side of the measuring unit, and the pressure of the liquid passing through the measuring unit opens the spring-closed valve in the discharge nozzle, and the delivery of a pre-determined quantity starts. When this delivery has been completed, the discharge control valve automatically closes, which simultaneously closes the valve in the nozzle and stops the flow.

SPECIAL DRIPLESS NOZZLE

Note the construction of the dripless nozzle especially designed for small package filling purposes. As soon as the discharge control valve,

on the inlet side of meter, closes, the spring valve in the nozzle closes and lifting the nozzle out of the can forces the wedge shaped cork poppet in the nozzle to "seat," which prevents any possibility of dripping. Two nozzle tips, one $\frac{5}{8}$" diameter, the other $1\frac{1}{8}$" diameter, are furnished to permit filling cans with different size openings.

Special Dripless Nozzle for Filling Cans



SHUT-OFF TRIP LEVER

If, after the discharge control lever has been engaged, it is desired to stop the flow of liquid quickly, before the pre-determined quantity has been discharged, it is only necessary to "trip" the auxiliary control lever which is located at a convenient point near the counter mechanism.

GENERAL SPECIFICATIONS

The Figure 789 is designed for either gravity or pump pressure operation. A maximum delivery speed of 25 G.P.M. may be attained under favorable operating conditions and with a sufficient pressure. The meter is tested under 50 pounds pressure but a maximum of 10 pounds is sufficient in most cases to produce the desired flow. Under average operating conditions, a 4 to 8 pound pressure at the meter, which is the equivalent of a 10 ft. to 20 ft. head, will give the necessary speed in delivery and insure efficient operation.

SPECIAL

To meet the needs of those plants whose production does not require a separate measuring unit for each grade of liquid packaged, Bowser has designed a Portable Carriage, Fig. 281, on which the Figure 789 may be mounted and used to satisfactorily handle several grades of similar liquids. For complete information on this accessory, see Figure 281 Bulletin. To facilitate filling cans with the Fig. 789 when mounted on a Portable Carriage, a platform can be furnished, at slight additional cost, attached to the carriage frame, at the proper height for filling.

In some plants it is possible to advantageously group some of the liquids, which are similar in color and characteristics, so that as many as six different grades may be satisfactorily handled through one measuring unit by a simple "header" arrangement connecting the piping to the measuring unit. Bowser engineers will survey your plant layout and production needs, then recommend the equipment best suited to your requirements.

Xacto Can Filling Units are equipped with a special non-mixing plate which minimizes mixing of the various liquids to a very negligible degree when the piping to the measuring unit is properly manifolded as recommended by our engineers.

The entire unit is sturdily constructed to withstand constant hard service. Barring mechanical injury from outside sources, it will render years of accurate, dependable, uninterrupted service.

FIGURE 790 THREE-QUANTITY PRE-DETERMINED

The Figure 790 differs from the Figure 789 solely in the fact that it will deliver any one of three pre-determined quantities, within the range shown below, instead of one fixed quantity repeatedly. It can be constructed to deliver any one of three quantities from 1 quart up, such as 1, 2 or 5 gallons, 5, 9 or 21 quarts, 3, 7 or 10 gallons, etc., as long as the largest quantity is not

Xacto Can Filling Units

FIGURES 789 & 790

greater than five times the smallest. For example: if requirements call for a unit to measure a predetermined quantity as low as 1 quart, the same unit cannot be set to measure a quantity in excess of 5 quarts. Each unit is specially constructed on order to meet the purchaser's requirements. Under certain conditions there are variations and limitations to the quantities this measuring unit will handle. It is therefore advisable to send complete information to our Engineering Department for consideration and approval to insure maximum efficiency in service.

The Figure 790 is provided with a gear shift lever or quantity selector which may be easily and quickly set for any one of the three quantities which the measuring unit is constructed to handle.

Specifications

STANDARD EQUIPMENT

MEASUREMENT: By 1¼" Bowser Xacto Meter which measures by positive volumetric piston-type displacement; extremely accurate at all speeds, under all conditions. For complete details, refer to Bowser Fig. 764 Bulletin.

PRE-DETERMINED QUANTITIES: For Fig. 789 see complete details under Caption of SIZE AND CAPACITIES, for Fig. 790 see under Caption of FIGURE 790 Three-Quantity Pre-Determined

CONSTRUCTION: Designed and built of highest quality materials suited to liquids to be handled and constructed to withstand the severe requirements of continuous service.

CAPACITY: 25 gallons per minute (maximum).

PRESSURE: Measuring units are tested under 50 pounds pressure, however a maximum of 10 pounds at the unit will give the necessary speed in filling.

FINISH: Aluminum bronze paint.

TOTALIZER: Records in gallons to 100,000 gallons and repeats. Cannot be set back.

DISCHARGE ASSEMBLY: Adjustable by means of sliding tube which permits raising or lowering mechanism approximately 5 inches for filling cans of varying heights. Nozzle is adjustable by means of a lever which raises and lowers it about 1 inch to allow ample space for locating cans underneath and to permit dropping the nozzle into the fill opening of the can.

DRIPLESS NOZZLE: Specially designed for can filling. Fitted with spring valve which closes simultaneously with closing of control valve at inlet to meter. Lifting nozzle tip out of can forces a wedge-shaped cork poppet to "seat" and form a tight seal. Furnished with two tips, 5/8" and 1 1/8" diameter.

DISCHARGE CONTROL VALVE: Brass, poppet type, spring closing, located on inlet side of measuring unit. Operated by control lever which opens valve when engaged and starts flow of liquid. Closes automatically when pre-determined quantity has been discharged.

SHUT-OFF TRIP LEVER: Disengages shut-off arm and stops flow quickly, at will of operator.

FIGURE 790 PRE-DETERMINED QUANTITY MECHANISM: By manipulation of quantity selector lever, it may be set to deliver any one of the three quantities which it is built to handle. Automatically stops flow when quantity for which set has been discharged.

INLET AND DISCHARGE PIPES: 1¼-inch size.

SHIPPING WEIGHT: pounds (approx.).

DIMENSIONS:

Height over all, with discharge assembly lowered	26½"
Height over all, with discharge assembly raised	21½"
Distance from inlet to center of discharge assembly	27"
Distance from inlet to end of nozzle handle (nozzle handle in horizontal position)	32"
Overall width of measuring unit	11"

EQUIPMENT FURNISHED AT EXTRA COST

*Portable Carriage, Fig. 281.
*Strainer, Fig. 730
*Air Release, Fig. 753-C

**For complete information on these items, refer to individual Bulletins.*

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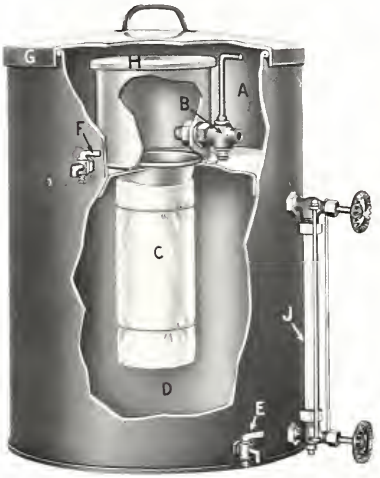
Figure 830 Portable Oil Filter

The Bowser Figure 830 Portable Oil Filter is especially designed for filtering used oil drained from crankcase types of steam engines, gas engines, air compressors, ice machines, turbines, and for filtering drippings caught in pans about any plant. Having a dirty oil receiving and settling compartment, filtering cylinder, and a clean oil storage compartment fitted with draw-off cock, the Figure 830 provides a convenient, quick means of filling oil cans, measures and containers with clean, filtered oil.



OPERATION

Dirty oil is poured into the dirty oil receiving and settling compartment (A) from where it passes through the adjustable inlet control valve (B) to the filtering cylinder (C) and into the clean oil storage compartment (D) from which point clean oil is withdrawn through draw-off cock (E).

Control valve (B) affords regulation of the oil flow to the filtering cylinder for most efficient filtration (maximum, one gallon per hour) and permits shutting off the flow when removing the cylinder for cleaning and replacing the filter cloth. Draw-off cock (F) permits withdrawal of the foreign matter which settles out of the oil in the dirty oil receiving compartment before filtration. Access to the filtering cylinder is easily gained by removing covers (G) and (H). Sight glass (J) shows level of oil in clean oil compartment.

CONSTRUCTION

The Filter shell and bottom are constructed of galvanized steel with seams and joints locked and soldered. The cover is made of pressed steel and fitted with a lifting handle. The filtering cylinder is fitted with a special filter cloth, and lifting handle. One extra filter cloth is furnished. Draw-off cocks and control valve are of plain brass. Sight glass is fitted with guard rods and shut-off valves.

GENERAL SPECIFICATIONS

Finish: Brown enamel with plain brass fittings.
Maximum Filtering Capacity: One gallon per hour.
Capacity of Clean Oil Compartment: 10 gallons.
Capacity of Dirty Oil Compartment: 3½ gallons, approx.
Size of Filtering Cylinder: 3½"x9".
Size of Filter Cloth: 9"x24".
Diameter of Filter Shell: 15¼".
Height overall: 22¼".
Shipping Weight: 65 pounds, approx.

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TORONTO LONDON BERLIN PARIS ROTTERDAM

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BEER FILTER

FIGURE 900

AND

SLURRY OUTFIT

FIGURE 905

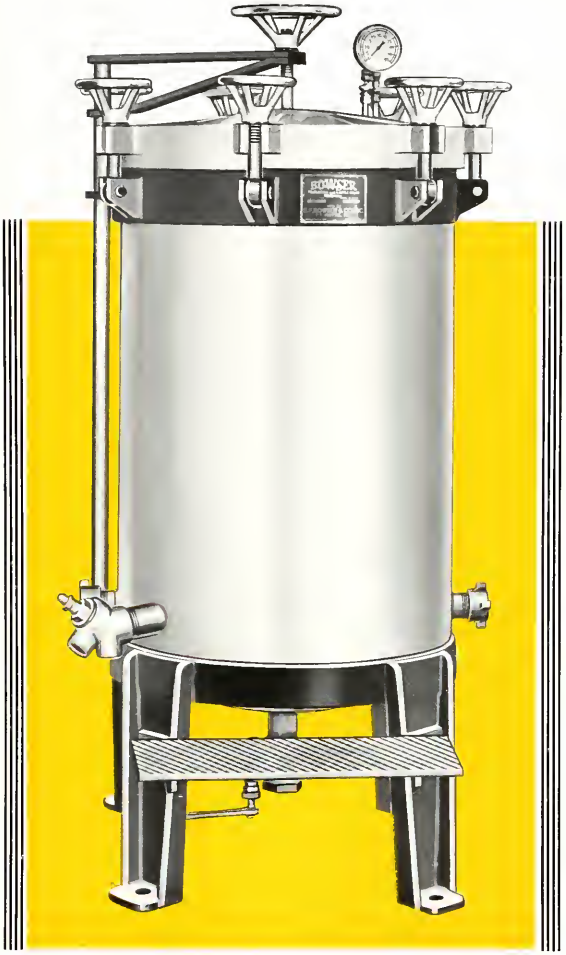

FIGURE 900 BEER FILTER

The Bowser Beer Filter is made in sizes to exactly meet the needs of any size plant. See page 4 for detailed specifications.

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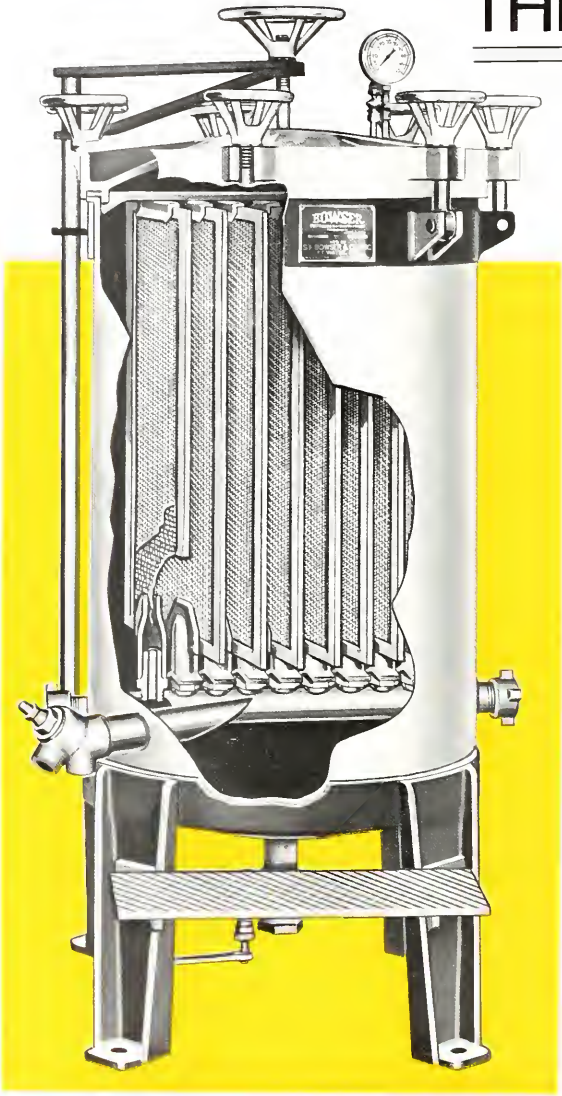

THE FIGURE 900 BEER FILTER

FIGURE 900 BEER FILTER

The Bowser Beer Filter is a highly perfected pressure filter designed especially for the complete removal of cereals, yeast and sedimentary deposits from beer during the brewing process.

Its advanced design is the culmination of extensive experiments and tests conducted in a number of nationally known breweries by Bowser Engineers whose experience in the handling of liquid filtration and purification problems extends over a period of 25 years.

The Bowser Figure 900 ideally fits in with any plant layout and brewing process. It incorporates a number of exclusive advantages and advanced refinements in beer filtration, outstanding among which are the following:

ADVANTAGES

1. Exceptionally easy to clean and sterilize. Can be thoroughly cleaned and sterilized in 15 to 20 minutes by one man.
2. Less frequent shutdowns for cleaning. One cleaning per day is sufficient in most plants to maintain the desired high rate of flow.
3. Greater capacity for longer cycles of operation.
4. Low cost operation and upkeep.
5. Simplified design and operation.
6. Remarkably fine degree of filtration.
7. Extremely moderate initial cost.
8. Requires exceptionally small floor space.

REDUCED COSTS

By virtue of its ability to (1) remove large amounts of heavy suspended solids at high rate of flow, (2) maintain greater capacities for longer periods of time, and (3) offer unusual ease and simplicity in cleaning, the Bowser Filter effects the following worthwhile savings in filtration costs:

BEER FILTRATION SYSTEM

1. Tremendously increases the life and capacity of the pulp or final-stage filters.

2. Eliminates 75% of the costly, time-consuming, messy final-stage filter cleaning operations.

3. Minimizes the heavy losses of filtermasse resulting from the numerous final-stage filter cleaning jobs required to maintain capacity.

4. Greatly reduces the cost of labor, power, steam and water necessary for filtering the beer.

5. Eliminates the necessity of allowing the beer to stand for long periods to enable gravity precipitation of the suspended solids.

Its extremely low initial cost combined with its amazingly low operation and up-keep costs and the above advantages, plus the fact that it has proved itself again and again in scores of plants, make the Famous Bowser Filter worthy of your serious consideration.

CONSTRUCTION

The Filter is substantially constructed for many years of service. All parts that come in contact with the beer are heavily tinned brass plate, bronze and monel metal, to insure against the possibility of any contamination or discoloration of the beer. There are no corners or "pockets" into which the solids can lodge and collect. It has absolutely no effect on the color or taste of beer. No ingredients vital to highest quality beer are removed.

It is built in three sizes with capacities sufficient to meet the needs of any size plant. Each size is furnished completely equipped with pressure gauge, 3" quick-opening gate-type drain valve, relief valve, platform, and inlet, outlet and by-pass connections tapped for 2" taper pipe thread. For capacities and other specifications see table on page 4.

The body and bottom head are made of heavy brass plate, tinned on the inside. The body seam is welded and the bottom head is butt-welded to body. The cover is of cast bronze, tinned on the inside. The cover fits into a grooved recess in the top of the filter body, which is equipped with a heavy rubber gasket, assuring a leak-proof joint when the top is in position with the hand wheels tightened. The bands at top and bottom, eye-bolts and swing arm are made of steel. The hand wheels are of nickel plated cast iron. The filtering elements are made of heavily tinned brass frames with inner cover of 4 mesh tinned brass screen and outer cover of 24 x 120 mesh monel metal screen, bound with brass tinned edging. The drain valve, relief valve and inlet and outlet connections are of brass.

The filter is substantially mounted on heavy supports which raise it to a convenient height for operation of the drain valve and making dump connection. The drain valve is placed at the lowest point in the bottom of the filter without any projection inside to prevent complete drainage.

EASE OF CLEANING

The operation of cleaning the Bowser Filter is very simple and requires but a few minutes of one man's time. Access to the interior of the filter body for cleaning and sterilizing has been simplified by means of a quickly removable cover. The cover, which is held securely in place by quick-opening 6" diameter hand wheels, is fitted with a swing arm and 12" diameter hand wheel by means of which the cover is raised and suspended, permitting it to be swung clear of the filter body, making the filtering elements easily and quickly accessible. A removable platform fur-

THE FIGURE 905 SLURRY OUTFIT

BOWSER BEER FILTRATION SYSTEM

nished may be bolted to any two of the supporting legs to enable the operator to stand at a convenient height when cleaning the filter.

Two swing arm supports have been provided on the sides of the body to accommodate varying installation requirements.

The filtering elements are mounted vertically inside the filter body and are individually installed for easy removal. Each element is provided with a separate outlet nozzle which leads into a manifold connected to the outlet of the filter.

EFFICIENT FILTRATION

The fine degree of filtration which is constantly achieved in the Bowser Filter is accomplished by means of the fine mesh monel metal screen gauze and the addition of filter-aid, which is applied to the surfaces of the monel metal. This filter-aid, long used in brewing processes, known as Hyflo Super-Cel is absolutely neutral and guaranteed not to affect the taste or color of the beer in the least.

FIGURE 905 SLURRY OUTFIT

Applying the filter-aid, or "pre-coating" the filtering elements before starting operation, is accomplished by mixing the filter-aid with beer in the Fig. 905 Slurry Outfit, agitating it thoroughly and then pumping it to the filter. The clear liquid passes through the filtering elements and returns to the slurry tank, the filter-aid adheres to and builds up on the outer surfaces of the elements. As soon as the liquid returning to the slurry tank is perfectly clear, the process of pre-coating" is completed (see table for approximate quantities of filter-aid required for "pre-coating" various sizes.

In addition to "pre-coating" before starting operations, it is necessary to introduce additional quantities of filter-aid during the filtration process, to insure maximum filtration efficiency. These additions of filter-aid are introduced into the filter by means of the slurry pump which may be adjusted to discharge the exact amount required.

The Figure 905 Slurry Outfit consists of a slurry tank equipped with a power-driven agitator, gauge glass, motor-driven Westco turbine pump, sight glass, throttling cock, by-pass valve (set at 40 pounds) and all equipment fully assembled as shown in illustration.

FIGURE 900 SPECIFICATIONS

Size	†Capacity Bbls. per Hour (31½ Gals. to Bbl.) Aged Beer	*Approximate Capacity Bbls. per Hour From Fermenters	Sq. Feet of Filtering Surface	*Amount of Filter-aid required for "pre-coating pounds	*Additional Filter-aid Required per Bbl. pounds	Maximum Pressure pounds	Overall Width inches	Height Overall inches	Floor Space Required (space for swing cover included) inches	Shipping Weight Approx. pounds
No. 1	92	50	92	8	1/10 to ¾	40	32	70	40 x 75	1250
No. 2	140	75	140	12	1/10 to ¾	40	36	73	45 x 84	1700
No. 3	244	125	244	20	1/10 to ¾	40	47	82	50 x 95	2300

†The capacities shown above are based upon actual experience. By the term "Aged Beer" reference is made to beer that has been in rest casks for *four weeks, or more*. For beer which has been in rest casks *less than four weeks*, the capacities will vary between those shown above.

*The amounts of filter-aid required, as shown above, will vary due to wide variances in brewing processes, conditions of the brew, etc.

FIGURE 905 SPECIFICATIONS

TANK: 160 gallons capacity. 12 gauge steel, all welded construction. Coated inside with an accepted brewers varnish. Fitted with hinged cover, gauge glass (calibrated in multiples of 2½ gallons from 10 to 150). Substantially mounted in a rigid frame.

AGITATOR: Horizontal, stainless steel, shaft, equipped with two agitator wheels with propeller type blades. Wheels and blades are brass, tinned. Shaft driven by ½ H.P. motor through chain drive. Speed of shaft, approx. 90 R.P.M.

PUMP: Westco turbine centrifugal type. All wearing parts are bronze, body, brass. Pump and motor bolted to a bed plate which is supported by the frame of the outfit.

MOTOR: ½ H.P. double-ended, geared-in-head type 1725 R.P.M. 60 cycle 3 phase, 220 volt. Motors of other current specifications furnished on request.

DIMENSIONS: Height to top of tank 50½". Overall height, with cover raised 65½". Overall length 56¾". Overall width 28".

SHIPPING WEIGHT: Approx. 660 lbs.

FINISH: Gray, same as Fig. 900 Filter Body.

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BOWSER
Storage Systems for Oils and Gasoline
Tanks, Pumps, Lubricators, Filters
S. F. BOWSER & CO., Inc.
HOME PLANT AND GENERAL OFFICES
Fort Wayne, Indiana, U. S. A.

Industrial Data Sheet for Meters

This Sheet Must Be Filled Out in Order That We May Determine the Correct Meter Specifications.

Date_____

Name_____ Address_____

City_____ State_____

Figure No. of meter desired_____.

Kind of liquid to be measured_____ If lubricating or fuel oil give viscosity or gravity_____.

Is meter operated by gravity pressure?_____ If so, what is head in feet? Maximum_____feet.
Minimum_____feet.

If meter is operated by pump pressure what is pump capacity_____G. P. M.?

Is pump provided with a relief valve?_____ If so, at what pressure does it open?_____pounds.

Is liquid strained?_____. If so, what is size of mesh?_____.

Is liquid discharged against pressure?_____. If so, how much?_____pounds.

If liquid is heated what is its temperature at meter? Maximum_____°F.
Minimum_____°F.

What is size of pipe line?_____inches.

(Additional data below to be given only for pre-determined type meters.)

If available current is A. C. what is Voltage?_____Phase?_____Cycle?_____.

If available current is D. C. what is Voltage_____.

Show plainly on the back of this sheet a sketch of how and where the meter is to be installed.

Remarks:

SALESMAN

SIGNATURE OF CUSTOMER

Sales 205 1000 3 34 E-78

Figure 1708
Belt Driven Rotary Pumps

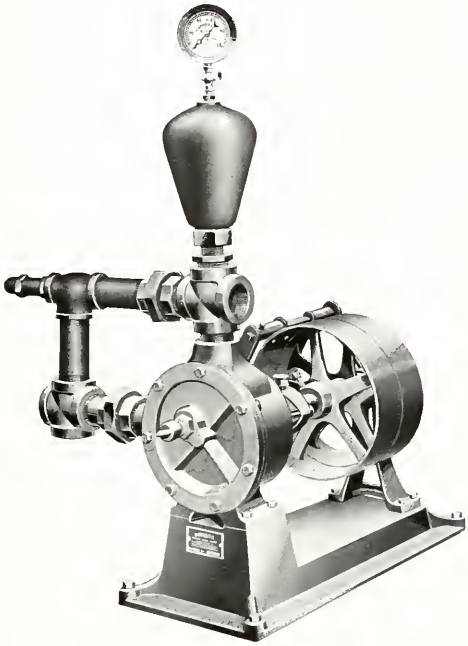

FIGURE 1708 PUMP
Equipped with By-Pass, Relief Valve, Air Chamber and Pressure Gauge (Not Furnished Standard)

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BOWSER ROTARY PUMPS [FIGURE 1708 BELT-DRIVEN]

The Bowser Figure 1708 is a belt-driven rotary pump designed for pumping and distributing both volatile and non-volatile liquids.

The Figure 1708 meets all ordinary requirements for a pumping and distributing unit to be driven by belt, either from a line shaft or directly from a motor. It, also, is especially applicable to those installations where volatile liquids are being handled and either alternating current, single phase or direct current motors are being used. On installations of this kind, the motor should be placed at least five feet above the pump.

The pump is ruggedly constructed of high quality materials, insuring many years of uninterrupted service. The design is simple but durable. It is economical in the use of power. The rotor and idler are the only two moving parts in the pump head insuring comparatively quiet operation. Both are simply but substantially constructed. The cylinder, cylinder heads and rotor are made of selected close grained cast iron of a very tough quality. The heads of the pump are ribbed, which gives them added strength without excessive weight.

The passages through which the liquid flows are ample so as to give a perfectly free flow. The construction is entirely of metal—all parts are carefully fitted, and all parts coming in contact with the liquids are made absolutely tight to prevent leakage or evaporation.

The specifications shown on the opposite page are calculated on the basis of a 15 foot suction and a working pressure of 50 lbs., using a light lubricating oil of about 300 viscosity at 100 degrees Fahrenheit. Below 25 lbs. use minimum horsepower; between 25 and 50 lbs. pressure use maximum horsepower.

Where cylinder oils and other heavy liquids are to be handled, they should be kept at 80 degrees Fahrenheit or over, and 30 per cent should be deducted from capacity and 30 per cent added to horsepower. If the horizontal suction is from 25 to 50 feet, or if the oil is of a heavy viscuous nature, the size of the suction should be increased one or two sizes of the pipe. The size of the discharge pipe should be increased one or two sizes if the length is over 100 feet.

The $\frac{1}{2}$ in., $\frac{3}{4}$ in. and 1 in. pumps should not be used for cylinder oil or heavy viscuous oils except under favorable conditions.

Specifications

The standard Figure 1708 consists of a rotary pump equipped with tight and loose pulleys, belt shifter, all substantially mounted upon a cast iron base.

SIZES: Furnished in eight standard sizes ranging from $\frac{1}{2}$ in. to 4 in.

TYPE: Belt driven, rotary.

PULLEYS: One tight and one loose pulley furnished on $\frac{1}{2}$ in. to 2 in. pump inclusive. On 3 in. and 4 in. pumps tight pulleys only.

BELT SHIFTER: Permits belt to be shifted from tight to loose pulley and vice versa on $\frac{1}{2}$ in. to 2 in. pumps inclusive.

BASE: Constructed of cast iron, large enough to accommodate pump and pulleys and can be securely fastened to floor or block.

EQUIPMENT FURNISHED AT EXTRA COST

CHECK VALVE: Keeps suction line full of liquid. Furnished of a size to fit suction line to pump.

AIR CHAMBER: Provides for any expansion of liquid due to rise in temperature. Located at discharge opening of pump.

BY-PASS: Permits liquid to by-pass around pump when pressure builds up sufficiently to open the relief valve. This arrangement prevents damage due to excessive pressures.

PRESSURE GAUGE: Indicates operating pressure.

MOTOR: Can be furnished in any size suitable for driving pump.

TRANSFORMER: Provides for reduction in voltage.

AUTOMATIC SELF STARTER: Permits gradual application of electric current to motor.

ELECTRIC REMOTE CONTROL VALVE: For controlling power and discharge at a point remote from the pump location.

STRAINER: For installation in the suction line to prevent dirt and other foreign matter from entering the pump.

ROTARY PUMPS

FIGURE 1708
BELT-DRIVEN

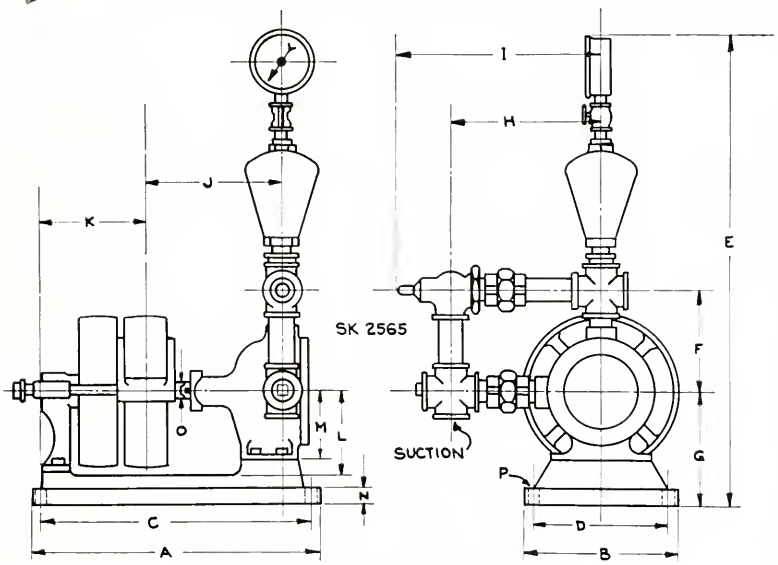

Figure 1708 Belt Driven Rotary Pump

Size	R.P.M.	G.P.M.	H.P.	Pulley Size	Floor Space	Shipping Weight	A	B	C	D
1/2	1200	4.5	1/2	4 3/4 x 1 1/2	6 1/8 x 11 5/16	60	11 5/16	6 1/8	10 7/16	5 1/4
3/4	1200	9	3/4	4 3/4 x 2	6 3/8 x 14 1/2	100	14 1/2	6 3/8	13 5/8	5 1/2
1 1/4	450	18	1	7 x 2 1/2	10 x 18 3/4	150	18 3/4	10	17 3/4	9
1 1/2	450	35	1 1/2 3	10 x 2 5/8	11 1/8 x 20 1/2	200	20 1/2	11 1/8	19 3/8	10
2	400	75	2-5	12 x 3 1/4	12 1/2 x 28 1/4	356	28 1/4	12 1/2	27	11 1/4
2	400	50	2-5	10 x 2 5/8	11 1/4 x 21 1/2	200	21 1/2	11 1/4	20 3/8	10 1/8
*3	350	160	7 1/2 10	24 x 6	15 x 37 1/4	650	37 1/4	15	35 3/4	13 1/2
*4	300	250	10 15	30 x 8	18 1/4 x 33 3/4	1000	33 1/4	18 1/4	31 1/2	16 1/2

Size	E	F	G	H	I	J	K	L	M	N	O	P Bolt
1/2	11 1/4	3 9/16	3 7/8	5 5/8	8 3/8	4 15/16	4 3/8	....	1 3/4	5/8	5/8	5/16
3/4	13 1/8	4 7/8	4	7 1/4	9	6 7/8	5 3/8		2 1/4	3/4	3/4	5/16
1 1/4	30 3/4	6 5/8	7 1/2	9 5/8	13 5/16	8 7/8	7 1/8	5 1/2	1 5/8	7/8	1 1/8	3/8
1 1/2	34 3/4	7	10 7/8	10 7/16	14 5/8	9 1/2	7	8 1/2	4 5/8	1	1 1/8	3/8
2	41	9 3/8	12	13 1/4	18 1/2	13 1/8	10 1/8	9 3/4	6	1	1 7/16	1/2
2	40	9 3/8	11	13 1/2	9 3/8	10	7 1/8		4 5/8	1 1/8	1 1/8	1/2
*3	51 3/4	12 3/8	16 1/4	12 5/8	18 7/8	16 1/2	14 3/4	13 1/2	7 3/4	1 1/4	1 15/16	5/8
*4	56 3/4	14 3/8	19 1/2	15 1/2	22 1/4	14 15/16	10 3/4	16 1/2	9 1/2	1 7/8	1 15/16	5/8

G.P.M. approximate. Motor H.P. approximate. Shipping Weight (without motor) approximate.
* Denotes pumps with tight pulley only. All other Pumps to have tight and loose pulleys.

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Figure 1709
Motor Driven Rotary Pumps

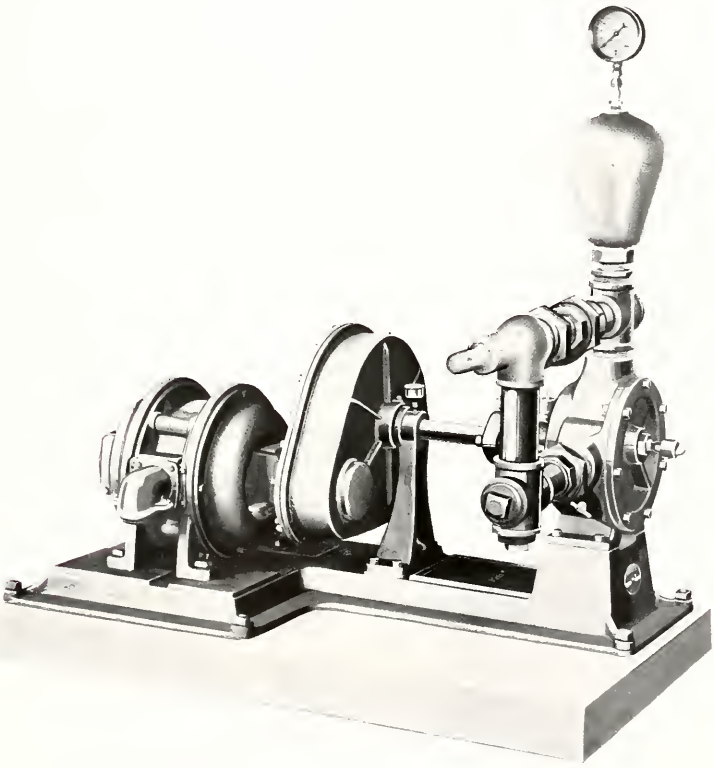

FIGURE 1709 WITH REDUCTION GEAR DRIVE

Equipped with By-Pass, Relief Valve, Air Chamber and Pressure Gauge (Not Furnished Standard)

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BOWSER ROTARY PUMPS [FIGURE 1709 MOTOR-DRIVEN]

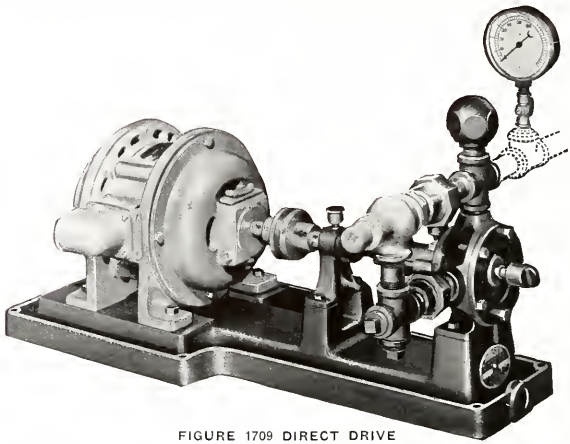


FIGURE 1709 DIRECT DRIVE

Equipped with By-Pass, Relief Valve, Air Chamber and Pressure Gauge (Not Furnished Standard)

BOWSER Figure 1709 Motor Driven Rotary Pumps are designed for use in pumping and distributing all kinds of liquids, in non-measured quantities, wherever electric current is available for motive power.

The illustration on page one shows the Figure 1709 with reduction gearing. In this outfit the motor is connected to the pump, through a set of reduction gears, which control the speed of the rotor. With this arrangement, excessive speeds which are harmful to the working parts of the pump and which reduce the suction capacity when handling heavy liquids, are avoided. It is furnished in 1½" to 4" sizes.

The pump shown above is the Figure 1709 with direct drive. In this outfit, the motor is connected direct to the pump. It is furnished in ¾", 1", 1¼", 1½" and 1½" sizes

These pumps are ruggedly constructed of highest quality materials. The design is simple, but durable. They are economical in the use of power. Special attention is given to the gearing, so that the running of the pump is as quiet as possible. All parts are mounted on a rigid base, making the outfit very compact and substantial.

There are only two moving parts in the pump head—the rotor and the idler. Both are of simple and substantial construction, and so designed that they are self-supporting, with the result that there is always sufficient clearance around them to prevent wear from friction.

The large annular gear or rotor fits closely inside the casing, the shaft of which extends through the casing and carries a gear for the application of power. The idler has a special bronze bushing and revolves on the hardened and ground steel pin in the head of the pump. The two gears mesh at a point in the casing midway between the suction and the discharge and form an absolute barrier so that the oil sucked in and contained in the open spaces between the teeth of both gears cannot flow any further but is forced out through the discharge port.

The passages through which the liquid flows are ample so as to give a perfectly free flow. The construction is entirely of metal—all parts are carefully fitted and all joints coming in contact with the liquids are made absolutely tight so there can be no evaporation or leakage.

The cylinder, cylinder heads and rotor are made of selected close-grained cast iron of a very tough quality. The heads of the pump are ribbed, which gives them added strength without excessive weight.

ROTARY PUMPS

FIGURE 1709
MOTOR-DRIVEN

Specifications

STANDARD EQUIPMENT

The Standard Figure 1709 consists of a power driven rotary pump and a substantial base suitable for pump and motor.

PUMP:

SIZES: Furnished standard in twelve sizes—⅜" to 1½" inc., direct connected to motor; 1½" to 4" inc., with reduction gear drive.

BASE:

CONSTRUCTION: Cast iron. Large enough to accommodate pump and motor of size required to drive pump.

EQUIPMENT FURNISHED AT EXTRA COST

MOTOR:

Can be furnished in any size suitable for driving pump. (If furnished by purchaser, motor must be sent to us for mounting on base).

CHECK VALVE: Keeps suction line full of liquid.

AIR CHAMBER: Provides for any expansion of liquid.

BY-PASS: Provides for by-passing liquid around pump. When ordered, we will install the by-pass on the pump and set the relief valve for pressure specified on the order.

RELIEF VALVE: Prevents possibility of excessive pressures.

PRESSURE GAUGE: Indicates operating pressure.

STRAINER:

For installation in the suction line to prevent foreign matter from entering pump.

TRANSFORMER:

Provides for reduction in voltage.

AUTOMATIC SELF-STARTER:

Provides for gradual application of electric current to motor.

ELECTRIC REMOTE CONTROL VALVE:

For controlling power and discharge at a point remote from pump location.

The specifications shown on reverse side are calculated on a basis of 15 feet suction and a working pressure of 50 pounds, using a light lubricating oil of about 300 viscosity at 100 degrees Fahr. Below 25 pounds, use minimum horsepower; between 25 and 50 pounds pressure use maximum horsepower.

Where cylinder oils and other heavy liquids are to be handled, they should be kept at 80 degrees Fahr., or over, and 30 per cent should be deducted from capacity and 30 per cent added to horsepower. If the horizontal suction is from 25 to 50 feet, or if the oil is of a heavy viscous nature, the size of the suction should be increased one or two sizes of pipe. The size of the discharge pipe should be increased one or two sizes if the length is over 100 feet.

The ½", ¾" and 1" pumps should NOT be used for cylinder oil or heavy, viscous oils, except under favorable conditions.

NOTE

FIGURE 1709 LABELED PUMPS

Where labeled pumps for gasoline handling service are required, they can be furnished in the following sizes: 1", 1¼", 1½" and 2".

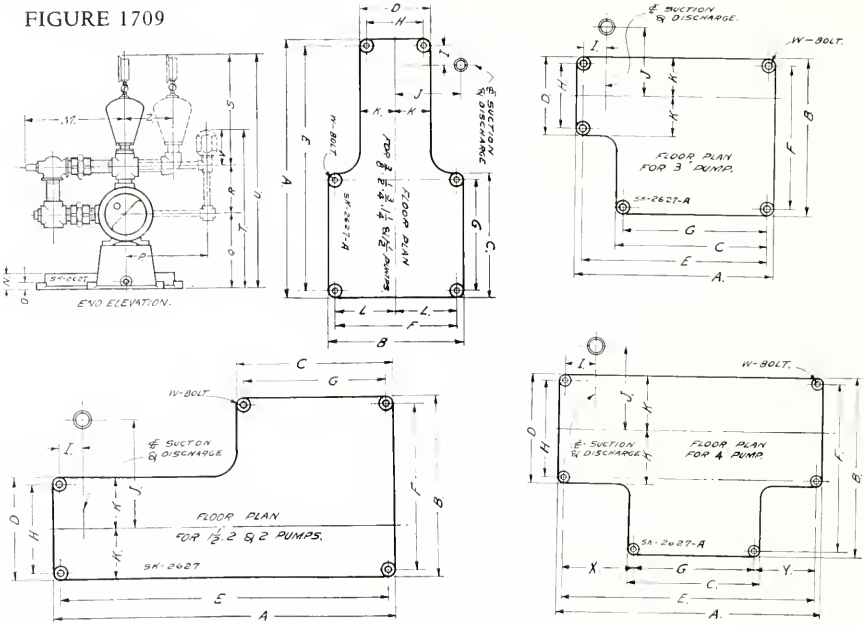
The 1" and 1¼" are direct connected and the 1½" and 2" are geared.

These pumps are equipped with by-pass and relief valve. Pressure gauge and enclosed, vapor-proof motors are furnished standard. Air chamber is not furnished. Prices and details of construction and dimensions of all sizes will be furnished on application.

Specifications and dimensions of the 1¼" Labeled Pump with ½ H.P. motor, are given on the reverse side.

END ELEVATION AND FLOOR PLANS FOR ALL PUMPS ARE SHOWN ON THE REVERSE SIDE.

FIGURE 1709



Size	Motor R.P.M.	G.P.M.	H.P. †	Pump R.P.M.	Size Suct.	Size Disc.	Floor Space	Ship'g. Weight ‡	A	B	C	D	E
3/8	1800	1-5	1/4	1800	3/8	3/8	9 1/16 x 17 3/4	30	17 3/4	9 1/8	10	5 3/8	17
1/2	1200	1-5	1/2-3/4	1200	1/2	1/2	14 3/8 x 26 3/4	90	26 3/4	14 3/8	14 3/8	7 1/2	25 7/8
3/4	1200	9	3/4-1	1200	3/4	3/4	12 3/8 x 28 1/2	115	28 1/2	12 3/8	13 1/8	7 1/4	27 5/8
1 1/4	1200	18	1-2	1200	1 1/4	1 1/4	16 1/2 x 32	175	31 7/8	16 3/8	16 1/4	8 3/8	30 5/8
*1 1/4	1200	18	1/2	1200	1 1/4	1 1/4	11 1/2 x 25 3/4	200	25 3/4	11 1/2	10 3/4	6 3/4	24 5/8
1 1/2	1200	35	2-5	450	1 1/2	1 1/2	20 x 38 1/8	260	38 1/8	20	18 3/8	11 1/8	37
**1 1/2	1200	35	2-5	1200	1 1/2	1 1/2	19 1/2 x 41 1/4		41 1/4	19 1/2	19 1/2	9 5/8	39 7/8
2	1200	50	2-5	400	2	2	21 3/8 x 37 1/4		37 1/4	21 3/8	17 3/4	9 3/4	36 1/8
2	1200	75	2-5	400	2	2	22 x 42	360	42	22	19 3/4	12 1/2	40 3/4
2*	1200	75	5-10	400	2	2	29 3/4 x 45 1/2	500	45 1/4	29 1/2	21 3/4	12 1/2	43 3/4
3	1200	160	10-20	350	3	3	38 x 37 1/4	900	37 1/4	38	29 3/4	15	35 3/4
4	1200	250	20-30	300	4	4	48 3/4 x 38 3/8	1500	48 3/4	38 3/8	24 1/4	20 1/2	46 3/4

Size	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W Bolt	X	Y	Z
3/8	8 3/8	9 1/4	4 5/8	1 7/16	3 1/16	2 11/16	4 3/16	6 5/8	1 3/8	1 1/8	2 5/16	4 5/8	4 5/8	....	12 11/16	....	3 7/8	5/16	....	....	....
1/2	13 1/2	....	6 5/8	1 5/8	5 5/8	3 3/4	6 3/4	8 3/8	2 3/8	1 5/8	....	7 1/8	3 9/16	....	14 1/2	....	4 1/4	3 1/16	....	....	....
3/4	11 1/2	12 1/4	6 3/8	1 11/16	7 1/4	3 5/8	5 3/4	9	2	1 1/2	....	6 3/4	4 1/8	....	15 7/8	....	4 1/4	1/2	....	....	....
1 1/4	15 1/2	15	7 1/8	2 3/8	8 1/8	4 3/16	7 9/16	11 13/16	2 7/8	1 1/2	....	9 1/8	5 1/8	16 5/8	....	30 7/8	....	1/2	....	....	....
*1 1/4	10 3/8	9 5/8	5 5/8	2 9/16	5 1/4	3 7/8	5 5/8	9 1/2	2 5/16	3/4	....	6 1/4	7 3/8	....	....	15 1/4	....	1/2	....	....	....
1 1/2	18 7/8	17 1/4	10	2 7/8	10 7/16	5 9/16	....	14 5/8	2 1/2	1	....	10 7/8	7 1/16	16 11/16	....	34 3/4	....	1/2	....	....	....
**1 1/2	18 1/8	18 1/8	8 1/4	3 1/4	7 11/16	4 11/16	9 1/16	11 7/8	2 1/2	1 1/2	....	9	7 5/8	....	....	33 5/8	....	5/8	....	....	7 11/16
2	20 1/4	16 5/8	8 5/8	2 3/8	13 1/4	4 7/8	....	18 1/2	2 3/8	1 11/16	....	11 1/8	7 3/4	19 1/16	....	38 9/16	....	1/2	....	....	....
2	20 3/4	18	11 1/4	3 3/4	13 1/4	6 1/4	....	18 1/2	2 3/16	1	....	12	9 3/8	19 11/16	....	41 1/16	....	5/8	....	....	....
2*	28 1/8	19 3/4	11 1/4	3 3/4	13 1/4	6 1/4	....	18 1/2	2 9/16	1	....	12 1/2	9 3/8	19 11/16	....	41 9/16	....	5/8	....	....	....
3	36 1/2	28 1/4	13 1/2	4 1/2	12 5/8	7 1/2	....	18 7/8	3	1 1/4	....	16 1/4	12 3/16	23 5/16	....	51 3/4	....	5/8	....	....	....
4	36 3/4	22 1/4	18 1/2	5 9/16	15 1/2	10 1/4	....	22 1/4	4 3/4	1 3/8	....	21 1/4	14 3/8	22 7/8	....	58 1/2	....	5/8	13 1/2	11	10 1/4

*1¼" Labeled Pumps, complete with ½ H.P. enclosed motor.
**Direct Drive.
*Takes motors over 5 H.P. G. P. M. approximate. †Motor H.P. approximate. ‡Shipping weight (without motor) approximate.

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Heavy Type "B" Tanks

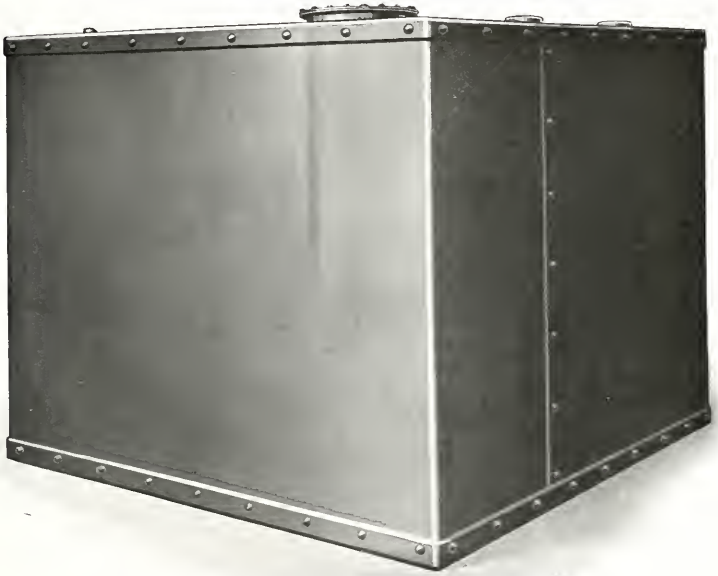


Illustration of a large, heavy steel, rectangular tank, showing the standard rivet-weld construction.

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

BOWSER Heavy Rectangular Tanks

BOWSER Heavy Type "B" Rectangular Tanks are designed and built for storing large quantities of such liquids as lubricating oils, cutting oils, kerosene, varnishes, and similar liquids.

The rivet-weld type of construction is used, combining the strength, rigidity, and trueness of the riveted tank with the added leak-proof qualities of the welded tank. All seams and corners are carefully welded and then riveted on approximately 8" centers.

A high grade of Open Hearth Soft Steel, commonly known as tank steel, is used in the construction of Bowser Heavy Type "B" Tanks. Manholes are either of cast steel or pressed steel.

The largest plates possible, considering the size of the tank, are used, as by using large plates it is necessary to have only the minimum number of seams and rivets. By following this practice the strength of the tank is increased and the possibility of leaks is decreased.

Both top and bottom plates are flanged so that they can be fastened to the outside of the side plates. These flanges are turned up by special machinery, which insures a true, straight flange with a true radii at the bending line. This is one more construction detail of Bowser tanks, which insures the greatest possible strength and a long term of trouble-free service.

Rivet holes are punched the same size as the rivets being used. After the sheets are assembled and ready for riveting, all holes are reamed 1 32 of an inch larger than the size of the rivet shank. With the straight, reamed, rivet hole the rivet will completely fill the hole when driven. The inside and outside head of the driven rivet will be in line with the shank. This insures a rivet joint of maximum efficiency.

All seams are welded to the same thickness as the metal used. After being completed the tank is very carefully tested with air pressure and inspected for imperfect workmanship and leaks.

One of the most important things to consider in the construction of any tank is the design and construction methods followed in connection with the corners and joints. Due to expansion, contraction, varying working head pressures, changes in temperature, etc., leaks usually develop at these places before they do anywhere else. Some of the methods used by Bowser & Company to avoid difficulties from this source are illustrated and described on the next page.

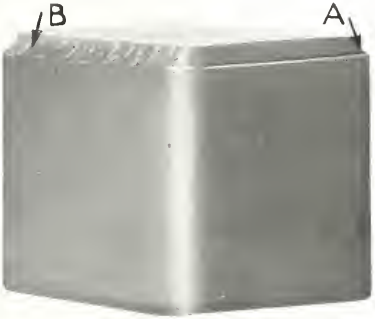
A Bowser tank is more than just a tank. It is a vault designed to give adequate protection to expensive liquids used in industry and commerce.

SPECIAL TANKS

Tanks of many kinds and sizes are made by Bowser. There are heavy tanks,

Heavy Rectangular Tanks

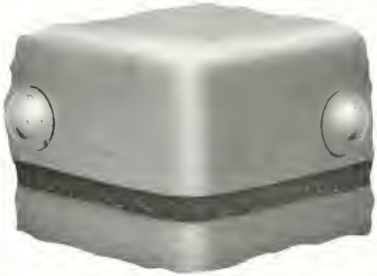
light tanks, rectangular tanks, cylindrical tanks, cone bottom tanks. All may be furnished with open or closed tops, with or without manholes, lead lined, copper lined, tin lined, with or without steam coils, with or without cleanouts, in fact in practically any size, material, shape or construction to meet your individual needs.



Materials used in building tanks are an important item. The materials used in building Bowser tanks are selected for their quality and ability to give efficient service. Construction methods are also most important and along with quality materials make a product that will give satisfactory service.

The methods used in Bowser tanks are best described with two simple illustrations shown on this page.

Welding is an operation that requires skill and experience. The welding on a Bowser tank is done by experienced workmen who have studied welding practices and methods. "A" shows a seam, as the plates, having an ultimate strength of 45,000 to 55,000 pounds to a square inch, are laid together. Note the perfect fit and thickness of the sheets. "B" shows a seam after the welding has been completed. The entire seam is filled and the plates are joined, making a smooth, strong, joint that will not open from expansion or contraction.



The above corner section shows the riveting and welding after the tank is completed. Note the smooth and perfect fit of the top plate over the sides. The corners of a rectangular tank are important and unless they are fitted accurately and united firmly, they will develop leaks.

Heavy Rectangular Tanks

Specifications

TYPE: "B" rectangular.

MATERIAL: Open hearth, soft, black, tank steel.

CONSTRUCTION DETAILS: Rivet-weld. Each seam welded to the thickness of the plates being used. After welding each seam is riveted on approximately 8" centers.

TESTING: Tested under air pressure.

STANDARD EQUIPMENT: Fill and suction pipes. Three 3½" flanges and one 1½" flange. Manhole, 16" in diameter with bolted cover. Flanges and manholes welded to tank.

BRACING: Internal bracing furnished when necessary.

FINISH: Steel blue, rust resisting, paint.

CAPACITIES, DIMENSIONS IN INCHES, AND SHIPPING WEIGHTS

Capacity in Gallons	DIMENSIONS			Gauge	Approx Shipping Weight
	Height	Width	Length		
800	54	54	64	3/16	1210
1000	54	66	66	3/16	1535
1200	54	66	78	3/16	1735
1500	60	66	88	3/16	2000
2000	72	72	90	1/4	3075
3000	72	78	124	1/4	4245
4000	84	90	124	1/4	5360
5000	96	90	134	1/4	6070
8000	96	114	167	1/4	8425
10000	96	114	212	1/4	10175
12000	96	114	254	1/4	12100

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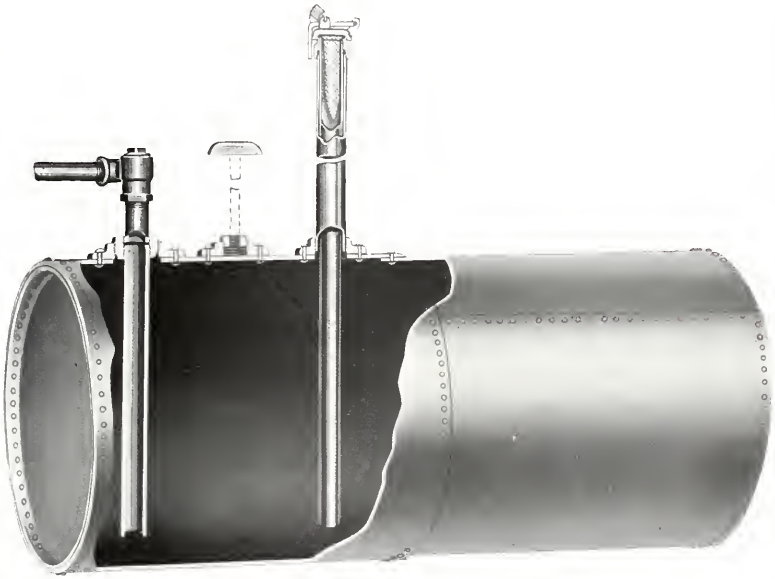
Light Type "C" Tanks



Standard Light Type "C" Cylindrical Storage Tank, showing riveted and soldered construction, fill pipe, inner steel fill tube, strainer, solid lock fill cap, suction stub, and air vent protector. (Line valve is not standard with tank.)

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS ROTTERDAM

LIGHT TYPE "C" TANKS

Bowser Light Type "C" Cylindrical Tanks are designed and manufactured for storing comparatively small quantities of gasoline, lubricating oils, kerosene and similar liquids. They are furnished standard in capacities ranging from 65 gallons to 1,000 gallons and are constructed of 12 and 14 gauge galvanized steel with all seams thoroughly riveted and soldered.

The materials used in the construction of Bowser Light Type "C" Tanks are of the highest grade galvanized steel, of full gauge, free from flaws and buckles, and conform to the specifications adopted by the Association of American Steel Manufacturers.

After the sheets have been punched and rolled into proper shape, the holes are matched up as nearly as possible, and then drilled (in addition to the punching) to insure proper alignment of the holes, so that when the tank is riveted, the rivet drives into the hole squarely—thus insuring a tight joint which any strain upon the tank will not be able to break. All seams are single riveted lap joints, metal to metal with tinned rivets spaced on 1 in. centers. All girth and longitudinal seams are thoroughly flushed with solder on the outside—and the heads are soldered on the inside. The heads are similarly riveted, but in addition, the outside edges are caulked and the tank placed in an upright position in a special head soldering machine, where heat is applied while the tank is revolved. Into the tank is put an exact quantity of solder shots which are naturally thrown into the seam of the tank where they melt and completely fill the joint. This practically sweats the head into the tank.

The soldering of the seams outside, and the sweating of the heads into the tank (an exclusive Bowser method) insures absolutely safe and oil-tight liquid storage, either under or above ground.

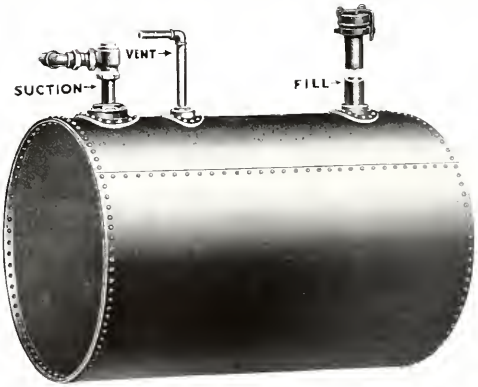
All flanges are drop forged steel, galvanized and riveted and soldered to tank.

After complete assembly, each tank is subjected to an air pressure test which is equal to at least 100% more than is required to safely carry the weight of potential contents. This test is made to reveal any possible leaks in the riveting and soldering, and also to check the different members of the tank for strength.

An Underwriter's Label is affixed to each tank, which signifies that the design and construction meet with their requirements for safe storage of liquids.

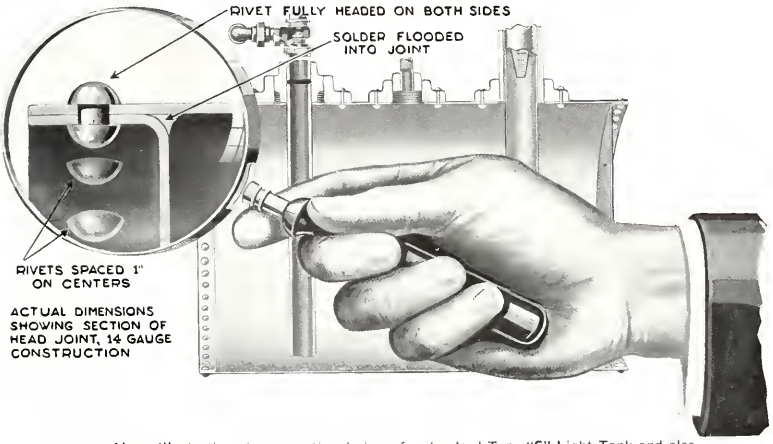
The following fittings are included with standard Light Type "C" Tanks: a suction stub which consists of suction pipe inside of tank, and all necessary fittings; a fill pipe consisting of 30 in. length of 2 in. galvanized pipe with inner steel tube extending to bottom of tank and removable cone strainer at top; a solid or concentric fill cap for the top of fill pipe; a 1 in. Figure 164 Air Vent Protector; a wood gauge stick; one $3\frac{1}{2}$ in. flange for suction; one 2 in. flange for fill and one 2 in. flange for vent pipe. The 1,000 gallon size includes an additional $3\frac{1}{2}$ in. flange for an extra suction pipe.

Notwithstanding the fact that the galvanized sheets used in the construction of Bowser tanks are practically rust-proof, all underground tanks are painted with a special rust-resisting mineral paint which will add years to the life of the tank.



Above illustration shows a standard, 120-gallon, Type "C" Cylindrical Tank furnished complete with suction, fill and vent pipes, ready for immediate installation.

LIGHT TYPE "C" TANKS



Above illustration gives a sectional view of a standard Type "C" Light Tank and also shows a corner section of the tank magnified to indicate the actual thicknesses of the steel, method of riveting, and the manner in which the joints are flooded with solder. This type of construction positively insures safe, leak-proof liquid storage for the maximum length of time.

Heads are securely soldered into a Bowser Tank, by the method shown at left and right. The tank is placed in this special machine, as shown in the illustration at left, and then caused to revolve rapidly while the heat is applied around the seam, as shown at right. By this method the solder shots, which have been placed in the tank, are thoroughly melted and the molten solder naturally flows to the outside, completely filling the seams, and builds up inside as shown in illustration above. A seam soldered in this manner remains leak- and evaporation-proof permanently.

BOWSER LIGHT TYPE "C" TANKS

Specifications

STANDARD EQUIPMENT

Bowser Light Type "C" Tanks are furnished standard in capacities, as shown in table below, and are provided with three flanges, suction stub, fill pipe, air vent protector and gauge stick.

TYPE: C Cylindrical

MATERIAL: Galvanized steel, 12 and 14 gauge (see table below).

CONSTRUCTION DETAILS: All seams riveted and soldered. Rivets spaced on 1 in. centers. Shell seams soldered on outside; head seams and flanges soldered on inside of tank. All seams are single riveted lap joints.

FLANGES: Each tank is provided with one $3\frac{1}{2}$ in. flange for suction and two 2 in. flanges—one for fill pipe and one for vent pipe. The 1,000 gallon, 12-gauge tank is provided with an extra $3\frac{1}{2}$-in. flange for an additional suction pipe.

SUCTION STUB: The suction stub consists of the suction pipe inside the tank, double bossed bushing, one 2-in. street ell, one 2-in. street union, and one 2 in. x 4 in. galvanized nipple.

FILL PIPE: 30 in. length of 2 in. galvanized pipe with inner steel tube extending to bottom of tank and removable cone strainer at top. Standard with solid lock cap. Fill pipe will be furnished up to 5 ft. in length if specified, at no extra cost. Extra charge for over 5 feet in length. Note: When ordered, concentric fill and vent PIPE with lock can be furnished in place of Air Vent Protector and Solid Lock FILL PIPE.

AIR VENT PROTECTOR, FIGURE 164: The vent pipe should be extended to the proper height above the roof of the building and capped with the Figure 164 Air Vent Protector. This prevents snow and rain from entering the vent pipe and also eliminates the danger of sparks getting to the tank.

GAUGE STICK: A gauge stick, graduated in inches, with a chart, is furnished standard so that the approximate quantity of liquid in the tank can be ascertained at any time. Gauging is done through the fill pipe—the screen at the top being removed during this process.

UNDERWRITERS' LABEL: Attached to each tank—indicates the Underwriters' approval for safe storage of liquids.

EQUIPMENT FURNISHED AT EXTRA COST

FILL BOXES: Several styles and sizes of fill boxes are available for placing over the exposed end of fill pipes where it is necessary to protect them against damage by traffic. *(For complete information see Accessories Bulletin Figures 158, 174 and 175.)*

LINE VALVE: The line valve, which is for the purpose of keeping the suction line full of liquid at all times, is intended for installation immediately above the tank. It is furnished in 2-in. size only.

SUCTION SLEEVE WITH COMPANION FLANGE AND ELBOW, FIGURE 326: When a foot valve is used in a tank buried under concrete, it is always advisable to provide a means of removing this valve when necessary, and with the least possible inconvenience. The Fig. 326 meets this requirement exactly. *(See Accessories Bulletin Figure 326 for complete information.)*

FLOAT SUCTION, FIGURE 280: The float suction, as the name implies, floats on the surface of the supply of liquid in the tank, permitting the liquid to be drawn from the top of the supply, thus eliminating the withdrawal of sediment from the bottom of the tank. *(For complete details, see Figure 280, Accessory Bulletin).*

STORAGE INDICATOR: Figure 202-B provides a means for determining the approximate contents of tank at any time. The indicator may be located at a remote point most convenient for ready reference. Tanks must be equipped with manhole, so that entrance can be gained into the tank for making installation. *(For complete information, see Accessories Bulletin on Storage Indicators).*

FILL PIPE: Over 5 feet in length at extra cost.

PIPE AND FITINGS: For connecting pump to tank.

CAPACITIES, DIMENSIONS AND SHIPPING WEIGHTS OF STANDARD LIGHT TYPE "C" TANKS

Gallons	OUTSIDE DIMENSIONS		SHIPPING WEIGHT, POUNDS APPROXIMATE	
	Diameter in Inches	Length in Inches	14 Gauge	12 Gauge
65	$31\frac{1}{4}$	$23\frac{1}{4}$	155	
120	$31\frac{1}{4}$	$41\frac{1}{4}$	195	
280	$38\frac{1}{2}$	$60\frac{3}{4}$	300	
550	$38\frac{1}{2}$	$116\frac{1}{4}$	460	
1000	$52\frac{7}{8}$	$111\frac{3}{4}$		930

Specifications on larger sizes will be furnished on application.

Varnish Tanks

ILLUSTRATION OF VARNISH TANK SHOWING CLEAN-OUT OPENING, CARD HOLDER, DRAW-OFF AND RIVET-WELD CONSTRUCTION

S. F. BOWSER & COMPANY, Inc.
FORT WAYNE, INDIANA, U. S. A.
TORONTO LONDON BERLIN PARIS SYDNEY

VARNISH TANKS

In order to meet certain specific conditions prevalent in the storing of varnish, we have designed a number of special tanks for this purpose.

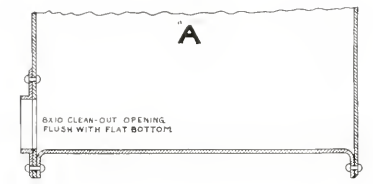
These special varnish tanks are rectangular in shape, of rivet weld construction, and include such features as are essential for the proper storing of varnish, including facilities for cleaning. (See our Heavy Type "B" Tank Bulletin for details relative to construction.) They are not built in standard sizes or capacities as these must be governed by the space available for the installation of such tanks and by the storage facilities required. They are intended for installation in a vertical position on a raised platform.

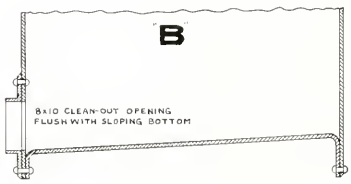
Tanks can be constructed either with or without internal bracing. Where such bracing is not objectionable, a lighter grade of steel can be used in constructing the tank. The cross tie bars connecting the four sides are so arranged that they may be utilized as a ladder for entering the tank. Where no bracing is desired, the tank must be constructed of materials heavy enough to stand the full weight of the contents without bulging.

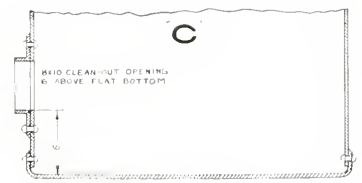
The diagrams below show the different types of tank bottoms which can be furnished. For styles "A" and "B," the necessary steel supports for carrying the tank bottom on the foundation, are furnished with the tank.

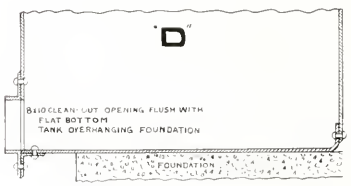
Standard equipment furnished with each tank includes 16 in. manhole, with bolted cover, fill, draw-off and vent flanges, 8 in. by 10 in. clean-out and card holder. Tanks are painted with one coat of boiled linseed oil before shipment.

In requesting prices for special varnish tanks it is necessary to give, in detail, the dimensions of the space available for the installation of such tanks, the storage requirements and the number of tanks desired.









Air Regulating Accessories

1

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3

4

5

Bowser Air Regulating Accessories are for controlling the use of compressed air.

They consist of a water trap, pressure reducing valve, pressure gauge, relief or safety valve, and a combination pressure reducing and relief valve.

No. 1.—Water Trap. A certain amount of moisture is always present in compressed air. The Bowser water trap serves as a storage receptacle for moisture separated from the air. Accumulated water may be drained through the pet cock.

No. 2—Pressure Reducing Valve. This valve serves, as the name implies, as a unit for reducing the air pressure, coming from the storage tank, to the pressure at which it is to be used. The mechanism is simple and positive, and is easily adjusted for changes in pressure.

No. 3.—Pressure Gauge. Shows the number of pounds of air pressure being released into the lines.

No. 4.—Relief or Safety Valve. Serves as a precaution against over-pressure in the event of any carelessness in making adjustments, or in case of failure on the part of the Pressure Reducing Valve, allowing the pressure to rise higher than it should. This valve is always set and sealed in our factory and should not be changed.

No. 5.—Combination Pressure Reducing and Relief Valve. This unit serves the same purpose as the Nos. 2 and 4 units and can be used to advantage under certain conditions, instead of the separate units.

S. F. BOWSER & COMPANY, Inc.

FORT WAYNE, INDIANA, U. S. A.

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Hose Draining Attachments

FIGURES 210 AND 210-B

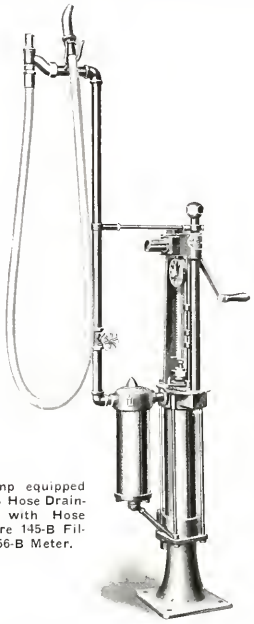


Figure 41 Pump equipped with Figure 210-B Hose Draining Attachment with Hose and Nozzle, Figure 145-B Filter, and Figure 156-B Meter.

The Figures 210 and 210-B Hose Draining Attachments are designed and manufactured to make it possible to drain the hose completely on pumps not already equipped with such an arrangement.

FIGURE 210

The Figure 210 Attachment (not illustrated) consists of a hose draining valve only. This hose draining valve is placed at any remote point from the pump where it is desired to discharge gasoline—the pump and valve being connected with ordinary pipe. It is furnished in ¾ in., 1 in., and 1¼ in. sizes.

FIGURE 210-B

The Figure 210-B Hose Draining Attachment (shown in illustration) is intended for draining the hose at the pump, and not for extending its point of discharge. It is applicable to Bowser Figure 41 Pump only. The Figure 210-B consists of a discharge pipe, globe valve, hose draining valve, brace, and hose hanger. The hose and nozzle (shown in illustration) are not standard with the hose draining attachment. If hose and nozzle are desired for this equipment, ¾ in. hose with a ¾ in. hose nozzle should be ordered.

Shipping weights (approx.):

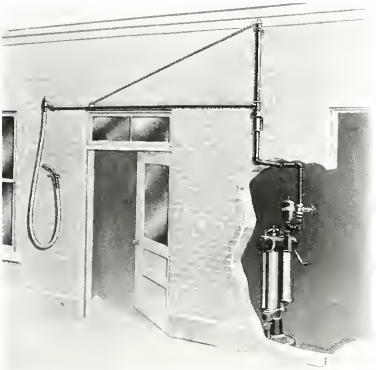
Figure 210	12 lbs.
Figure 210-B	35 lbs.

Swing Arm Discharge

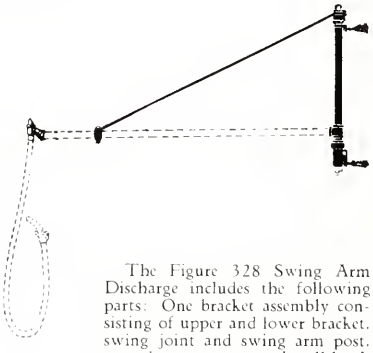
FIGURE 328

In some cities and localities, either due to local conditions or city ordinances, it is not permissible or desirable to place a pump at the curb and it is necessary to set the pump inside the building.

In order that cars may be served at the curb we have designed our Figure 328 Swing Arm Discharge for installation on our inside pumps, Figures 41 and 101-C, so that the discharge point may be extended and swung to the curb.



Swing Arm Discharge Installed on Figure 101-C Pump Located Inside Building



The Figure 328 Swing Arm Discharge includes the following parts: One bracket assembly consisting of upper and lower bracket, swing joint and swing arm post, tie rod arm support and wall hook Figure 132. (See illustration below.) The balance of pipe necessary is determined by each individual installation and is therefore not included, but may be obtained locally, inasmuch as it is common 1 1/4 in. galvanized pipe. The hose and nozzle are not standard but will be supplied by us if desired, at extra cost.

This equipment is furnished standard in 1 1/4 in. size but can be furnished in 1 in. size. When 1 in. size is desired, the 1 1/4 in. size will be furnished with the necessary bushing.

Shipping weight (approx.) 60 lbs.

Wall Hook

FIGURE 132

The Figure 132 Wall Hook is made for convenience in hanging hose on the wall where portable nozzle is used. By its use, the hose is saved from damage and is always in its proper place. It is furnished in three sizes—3/4 in., 1 in. and 1 1/4 in. It is finished in black enamel and is provided with two holes for fastening on to the wall. When ordering, specify size of hose for which it is to be used.

Shipping weight (approx.) 3 lbs.

Figure 132

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Hose Nozzles

NOS. 35, 38 AND 39

Bowser Hose Nozzles Nos. 35, 38 and 39 are of the open type (dry hose) and are applicable for use on visible and piston type pumps.

The No. 39 is for use with $\frac{3}{4}$ in. hose, and has a tip 4 in. long, outside diameter $\frac{15}{16}$ in. at end of tip.

1¼" Hose Nozzle

The No. 35 is for use on 1 in. hose and has a tip $4\frac{1}{8}$ in. long, outside diameter $1\frac{1}{8}$ in. at end of tip.

The No. 38 is for use with $1\frac{1}{4}$ in. hose and has a tip $5\frac{1}{2}$ in. long, outside diameter $1\frac{5}{16}$ in. at end of tip.

These nozzles are of all brass construction, carefully machined.

Approximate shipping weight, each 5 lbs.

FIGURE 131

The Figure 131 is an anti-drip, shut-off nozzle for use on the end of gasoline hose. It is applicable with Bowser Figure Nos. 41 and 44, 1-gallon piston-type pumps, when equipped with hose. It has an extra long nozzle tip ($5\frac{1}{4}$ in.) for inserting into gasoline tanks or other containers. It is of brass construction and finished in polished nickel plate.

This nozzle is furnished in $\frac{3}{4}$ in., 1 in., and $1\frac{1}{4}$ in. sizes—corresponding to size of hose being used.

Approximate shipping weight 5 lbs.

Figure 131

FIGURE 189

The Figure 189 nozzle is of the pistol type for use on wet hose dispensing outfits where the flow of liquid is controlled at the end of the hose.

This nozzle is especially suited for use with dispensing outfits which deliver a continuous flow of liquid to the point of discharge. It may also be used in connection with visible type pumps when it is desired to control the discharge at the nozzle.

By use of this nozzle the operator is enabled to closely observe the amount of gasoline in the automobile tank—fill the tank without overflowing or spilling a drop. Its action is controlled by simply depressing the control lever.

Service is speeded up by reason of the fact that it is unnecessary to drain the hose at each filling operation. The hose remains full of gasoline at all times. Discharge begins immediately upon opening the valve in the nozzle, and ceases instantly upon closing it.

Figure 189

This nozzle operates very easily and maintains the quick, positive shut-off action necessary on a nozzle for use of this kind.

It is designed so that the operator can handle it with one hand. The nozzle is constructed of brass with a tip $8\frac{1}{4}$ in. long and 14 in. over all. It is furnished in $1\frac{1}{4}$ in. size only.

Shipping weight approximately 5 lbs.

Hose Nozzles

FIGURE 590

The Figure 590 is designed for use on gasoline dispensing equipment of the wet-hose type. It is furnished standard with Bowser Xacto and Varley Sentry meter pumps. It provides an easy and positive method of controlling the speed and volume of flow without the grabbing, jerking, chattering and vibrating action so disagreeable and prevalent in many other wet-hose nozzles.

Regardless of whether the flow is at the full speed of the dispensing apparatus, or throttled down to a slight dribble, the action is constantly the same—extremely smooth, easy to handle. This nozzle can be closed instantly, stopping the flow at full speed, without the objectionable vibrating and chattering actions.

By virtue of this smooth, steady operation gasoline tanks can be filled to capacity without spilling or overflowing.

The nozzle is made of cast bronze and brass so that striking it against the gasoline tank or any other metal object will not cause a dangerous spark. It has been inspected and tested by the Underwriters' Laboratories and is approved by them as being perfectly safe for gasoline service.

It is furnished in the 1 in. size only.

Shipping weight, approximately 5 lbs.

FIGURE 590-A

The Figure 590-A nozzle is the same as the Figure 590 except that it is provided with a non-hose-draining check valve to meet special requirements of certain States.

With the Figure 590-A, the liquid remaining in the hose at the finish of a serving operation, cannot be drained out. When the handle is released, permitting the control valve to close, this self-acting, spring-actuated check valve, located at the inlet to the nozzle body, automatically closes. This holds the hose full of liquid at all times, but until the pumping mechanism is again placed in operation, no liquid will flow from the hose even though the control valve is opened. Immediately upon starting the pumping unit, the spring-actuated check valve is released and upon opening the control valve a flow of liquid from the nozzle is again obtainable. This feature prevents unauthorized or accidental drainage of the hose.

All other characteristics and specifications of the Figure 590-A are the same as those applying to Figure 590.

FIGURE 573

The Figure 573 nozzle is recommended for use with "metered" fuel oil delivery systems. With exception of the solid tip, it embodies the same operation and construction advantages as the Figure 494 and in addition is fitted with a notched trigger guard and a non-hose-draining check valve.

The notched trigger guard affords unusual convenience in service as it enables the operator to set the trigger for either a slow or wide open flow and in this way dispense large quantities of liquid without any further manual attention being required until the desired quantity has been discharged.

The purpose and advantage of the non-hose-draining check valve is fully explained under the FIGURE 494 A with which nozzle it is also furnished standard.

The Figure 573 is made in the $1\frac{1}{4}$" and $1\frac{1}{2}$" sizes. Nozzle tip is $6\frac{1}{2}$" long. Shipping weight approx., 10 lbs.

FIGURE 573-A

The Figure 573-A is furnished standard with Bowser Airport Fueling Systems, Figures 230, 232 and 235. It is the same as the Figure 573 except that it is equipped with a strainer and protective slip cap.

The strainer which is of the fine mesh screen type and built into the solid nozzle tip serves as a final precaution against dirt and other injurious matter passing into the fuel tanks of aircraft units.

Figure 573-A

The snug fitting protective cap (chained to the nozzle body), when placed over the nozzle tip, prevents dirt and other foreign matter from entering the nozzle, should it be dropped on or pulled across the surface in returning the hose and nozzle to the service pit at a remote distance.

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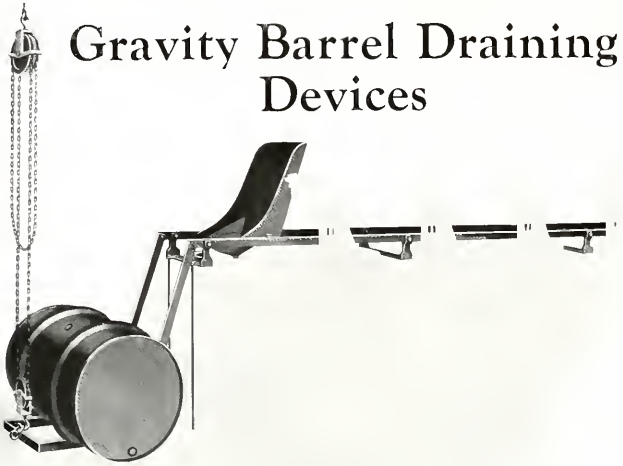
Gravity Barrel Draining Devices



Barrel Dash, Barrel Cradle and Barrel Track Installed on a Battery of Figure 64 Outfits

BARREL DASH, BARREL CRADLE AND BARREL TRACK

FIGURES 171, 330 AND 331

Bowser Figure 171 Barrel Dash, Figure 330 Barrel Cradle and Figure 331 Barrel Track together with Chain Hoist and Figure 344 Barrel Chine Hook are especially designed for the handling and draining of contents of barrels into first floor and basement storage tanks placed in battery form. They are particularly suited for use with Bowser battery outfits Figures 64, 109, and 115.

By the use of these Barrel Draining Accessories a barrel of oil may be easily rolled on to the cradle, lifted to the height of the tanks and rolled along on the track to the tank to be filled. The barrel is then placed in position on the barrel dash and allowed to drain completely, without further attention, mess or loss of oil.

The above illustration clearly shows the ease with which barrels are handled and contents drained completely into the storage tank.

The adjustable Barrel Dash, Figure 171, prevents all spilling and waste during the draining operation. The Barrel Track and Cradle are constructed of heavy bar iron with supports securely bolted to the tanks, holding the track rigidly in position. It is possible to add more track as more tanks are needed, at any time.

The Barrel Cradle is a hinged continuation of the track of a shape to carry the track to floor level so that a drum or barrel may be easily placed on it. The Cradle is provided with a heavy ring into which the chain hoist hook is fastened so that Cradle may be elevated to position of the track on the tanks.

The width required at end of battery to swing the Cradle is as follows: 54 in. on tanks 29½ in. deep; 60 in. on tanks 36 in. deep. Supports are placed not more than 48 in. apart.

Barrel Track includes barrel stops, track supports and tie rods.

SHIPPING WEIGHTS (Approx.)

Barrel Dash, Figure 171	35 lbs.
Barrel Cradle, Figure 330	30 lbs.

Gravity Barrel Draining Devices

PORTABLE BARREL DRAINER

FIGURE 134

The Figure 134 Portable Barrel Drainer is intended to be used in conjunction with chain hoist and chine hook for filling wheel tanks and storage tanks not equipped with barrel track or other means of filling them. The barrel drainer consists of a sturdily built metal stand mounted on four casters, with barrel dash and drain pipe at suitable height so that barrel or drum may be elevated by means of a chain hoist and placed onto it, moved to tank to be filled, and allowed to drain. Illustration at right clearly shows the design and construction of this handy device.

This outfit is built in two heights, 32½ in. for tanks 29½ in. high, and 38½ in. for tanks 36 in. high.

Shipping weight is approximately 130 lbs.

CHINE HOOK

FIGURE 344

The Figure 344 Chine Hook consists of two hooks joined together with a ring.

CHAIN HOIST

FIGURE 332

The Chain Hoist furnished is a standard make half-ton hoist which is of sufficient strength to easily handle barrels of oil or other weights up to one-half ton.

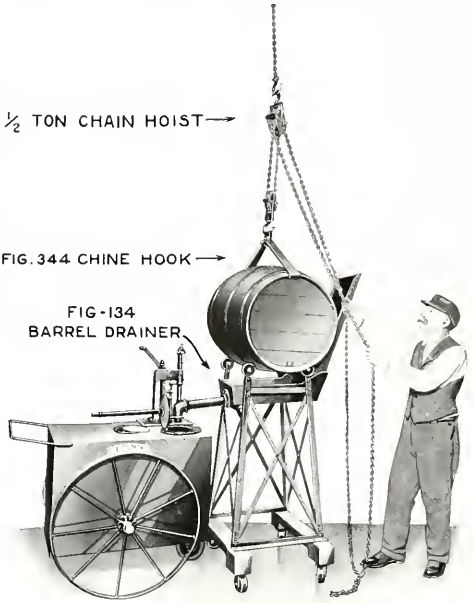


Fig. 134 Portable Barrel Drainer with Fig. 332 Chain Hoist and Fig. 344 Chine Hook in Position for Filling Bowser Fig. 154 Wheel Tank

Figure 135-B in Position Over Figure 174 Fill Box

COMBINATION TRACK, SKID AND BARREL DRAINER

FIGURE 135-B

This device was designed for use where cellar storage tanks are filled from the floor above—the drain pipe being arranged to fit into the fill box (Figure 174) in the floor. The device is provided with barrel dash, strainer, drain pipe, wheels and skid as shown in illustration.

It is a very simple matter to roll a barrel or drum onto the skid and turn it either crossways or endways as may be necessary to place the bung in proper position for draining. When not in use, the dash can be folded down, thus making it possible to store the Figure 135-B in a small space.

Shipping weight is approximately 110 lbs.

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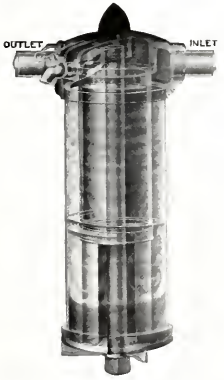
Centrifugal Filters

FIGURE 145-B

The Bowser Centrifugal Filter is a device which absolutely eliminates all water and foreign matter from motor fuel while it is being served.

This filter is an exclusive patented Bowser device, there being no filter with its equal in efficiency on the market.

The filter consists of cast iron top and bottom connected by seamless brass cylinder, inside of which is placed a galvanized metal tube and spiral and a fine mesh screen. Gasoline enters top of filter and is forced through by pressure of the pump. The spiral causes the liquid to take a circular motion which throws the water to the outside (water being heavier than gasoline) where it clings to the inner surface of the cylinder and trickles to the bottom of the filter where it is trapped until drawn off through filter draw-off.



Phantom View of Figure 145-B Showing Clearly the Construction of This Efficient Filter

Figure 145-B

FIGURE 145-B

The 145-B Filter may be installed on Bowser Figures 41, 44, and 121 outfits now in use or will be supplied at extra cost for any of these outfits at the time of purchase.

SPECIFICATIONS
Figure 145-B

Top and bottom castings: Semi-steel, black enamel.

Cylinder: 4¾" x 11⅞"—16 gauge brass, nickel plated.

Spiral: Sheet metal construction.

Screen: 60 square in. of 50 mesh, twilled brass wire cloth.

Overall dimensions: 6½ in. wide x 18 in. long.

Top water draw-off.

Size inlet and outlet: 1 in.

Shipping weight, approx.: 25 lbs.

Centrifugal Filters

FIGURE 255-A

FIGURE 255-A

The Figure 255-A Filter is used with the Bowser Airport Fueling Systems, Figures 230, 232 and 235. It is applicable, however, to any installation where it is desirable to remove water and foreign matter from gasoline passing through a pipe line under pressure. It is of considerably larger size and capacity than the Figure 145-B.

Phantom View of Figure 255-A

SPECIFICATIONS
Figure 255-A

1¼" Size

Top and bottom castings: Semi-steel, black enamel.

Cylinder: 6" x 23¾"—14 ga. polished brass.

Spiral: Sheet metal construction.

Screen: 110 square in. 50 mesh twilled brass wire cloth.

Overall dimensions: 7¾ in. wide x 30 in. long.

Figure 255-A

Bottom water draw-off.

Size inlet and outlet: 1¼ in.

Shipping weight, approx.: 60 lbs.

Figure 255-A, 1¼ in. size, may be used on any 5-gallon Hand Pump or Power Pump delivering up to 20 G.P.M.

2" Size

Top and bottom castings: Semi-steel iron, black japan.

Cylinder: 8" x 26¾"—12 ga. brass.

Spiral: Cast-iron construction.

Screens: Two—outside screen contains 250 sq. in. of 50 mesh twilled brass wire cloth and inside screen contains 230 sq. in. of 100 mesh twilled brass wire cloth.

Overall dimensions: 8¾ in. wide x 34 in. long.

Bottom water draw-off.

Size inlet and outlet: 2 in.

Shipping weight, approx.: 85 lbs.

2 in. size may be bushed for 1½ in. pipe lines. The 2 in. Figure 255-A may be used in connection with power pumps delivering up to 50 G.P.M.

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Fill Boxes

Figures 174 and 175

Bowser Fill Boxes are especially designed and ruggedly constructed for installation on fill pipes of storage tanks where the tanks are buried under concrete or where cellar storage tanks must be filled from the first floor or outside of building. The fill boxes may be installed set flush with the floor or ground level so that there is no obstruction, or danger of damaging the boxes.

Figure 174

FIGURE 174

The Figure 174 Fill Box is designed for use at any point, either inside or outside of building, where a fill box is desirable or necessary. It is especially adaptable where cellar storage tanks are filled from an upper floor when the Figure 135-B Barrel Skid and Drainer is used for emptying drums, barrels, etc. (see Figure 135-B Bulletin). The barrel drainer makes a tight joint with the fill box, thus eliminating oil-soaked floors due to leakage and spillage.

Figure 174 Fill Box is provided with a screw cover, and parts are accurately machined so as to be water-tight. Special wrench for opening it is included with the box.

The fill box screws onto the end of the fill pipe and may be furnished threaded for either 2 in. or 3 in. pipe.

DIMENSIONS
Figure 174

	2" Pipe Thread	3" Pipe Thread
Size of Plug	2 1/2"	2 1/2"
Diameter of top (over all)	7"	7"
Diameter of body (inside)	3 1/8"	4 1/8"
Diameter of body (over all)	3 5/8"	4 5/8"
Depth (over all)	8"	8 1/4"
Shipping weight (approx.)	15 lbs.	20 lbs.

Figure 175

FIGURE 175

The Figure 175 Fill Box fills the need where it is necessary to bury the tank with fill pipe under a sidewalk or pavement. This fill box is also installed set flush with the sidewalk or pavement and is constructed of malleable iron so as to withstand heavy traffic passing over it. The cover can be loosened and swung back out of the way. When closed it is securely fastened by means of a screw with hexagon head. A suitable wrench is supplied to facilitate removal of fill box cover. When Figure 175 is used, solid lock cap fill pipe must be installed.

DIMENSIONS
Figure 175

Diameter of top (inside)	8"
Diameter (over all)	11"
Diameter of body (inside) tapering	8" to 5 5/8"
Body (over all) tapering	8 3/8" to 6"
Total depth (inside)	6 5/8"
Over all (outside)	7"
Shipping weight (approx.)	20 lbs.

Fill Boxes

Figures 158 and 195

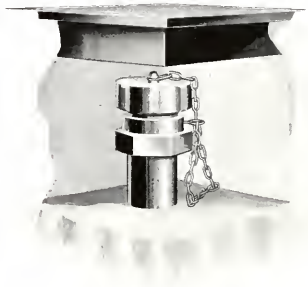

Figure 158 Box with Figure 325, Hose Connection and Cap on Fill Pipe

FIGURE 158

The Figure 158 Fill Box is intended for installation and set flush in concrete as a protective covering for fill pipes which are installed in a concrete pit and extend to within a short distance from the ground surface. The Figure 158 is not a complete box, but, as the illustration shows, serves only as a suitable frame and covering.

The Figure 158 is substantially constructed of cast iron throughout. It is equipped with a loose cover provided with a finger slot for the purpose of raising it.

DIMENSIONS
Figure 158

Length (over all)	17 3/4"
Width (over all)	14 3/4"
Depth (over all)	2 1/2"
Inside opening	11 1/2" x 14 1/2"
Shipping weight (approx.)	45 lbs.

FIGURE 195

The Figure 195 is a large size fill box consisting of frame and cover especially designed and built for installation as a protective covering for a concrete pit which is large enough to accommodate a metering device and strainer. The appearance of it is similar to the Figure 158 illustrated above.

The Figure 195 Fill Box is rigidly constructed of steel throughout with loose cover of Diamond Pattern design. Cover is provided with two disappearing, flush-type lifting handles affording easy access to pit. Angle iron anchoring clips are welded to all sides of frame for securely anchoring when it is embedded in concrete.

DIMENSIONS
Figure 195

Length (over all)	52"
Width (over all)	28"
Depth (over all)	2"
Inside opening	24" x 48"
Shipping weight (approx)	150 lbs.

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Remote Control Valve

FIGURE 213
REMOTE CONTROL VALVE

The Figure 213 Remote Control Valve consists of a quick acting gate valve and electric switch, both of which are operated at the same time by weighted operating lever. It is designed for installation at any point remote from central operating pump where discharge of any liquid such as gasoline, kerosene, naphtha, paint oils, varnishes, printing ink, etc., is desired. Its function is to start the electrically driven pump and open the discharge valve at practically the same instant. When the desired quantity has been discharged, the pump automatically stops upon closing the gate valve.

Any number of remote control valves may be connected to one central pumping unit, it being necessary, only, to take into consideration the number of discharge lines which might be opened at the same time and install pump with sufficient capacity to meet this condition. Either alternating or direct current pumps may be used.

Specifications

Starting Switch:

The starting switch of the Figure 213 Remote Control Valve has a single pole switch designed and built to carry up to 220 volts (5 amp.) or 110 volts (10 amp.) alternating current or 230 volts (5 amp.) direct current.

This switch can be used on single phase alternating current up to and including $\frac{3}{4}$ H.P. or on direct current up to and including $\frac{1}{4}$ H.P., without using self-starters.

Automatic self-starters are required for all electric currents and motors other than listed above.

Automatic Self Starters:

Automatic self-starters are required for starting motors that are controlled by the Figure 213 Remote Control Valve, except on single phase motors up to and including $\frac{3}{4}$ H.P. and D.C. motors not larger than $\frac{1}{2}$ H.P.

Sign Transformer:

When the electric power circuit exceeds 220 volts, alternating current, it is necessary to reduce that part of the current going through the Remote Control Valve to 110 or 220 volts.

This is accomplished by a pilot circuit of 110 or 220 volts taken from the lighting line or by means of a sign transformer connected to the power circuit. This sign transformer will reduce the 440 or 550 volts to 220 volts.

NOTE: *When ordering Figure 213 Remote Control Valve, current to be used should be fully described.*

Sizes:

Figure 213 can be furnished in the following sizes: $\frac{3}{4}$-in., 1-in., $1\frac{1}{4}$-in., $1\frac{1}{2}$-in. and 2-in.

Shipping Weights:

SIZE	SHIPPING WEIGHT, LBS (APPROXIMATE)
$\frac{3}{4}$-inch.	30
1 -inch.	35
$1\frac{1}{4}$-inch.	40
$1\frac{1}{2}$-inch.	45
2 -inch.	50

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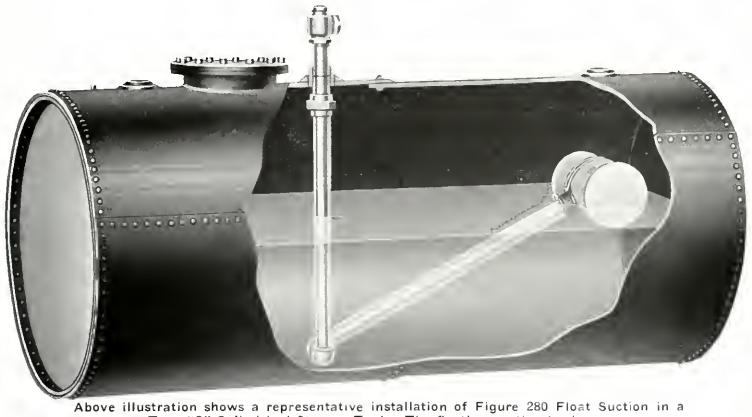
Float Suction



Above illustration shows a representative installation of Figure 280 Float Suction in a Type "C" Cylindrical Storage Tank. The floating suction is shown resting on the surface of the liquid.

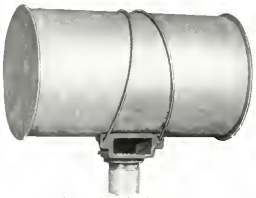
The Figure 280 Float Suction is especially designed and adapted for installation in storage tanks for the purpose of drawing liquids from the top instead of from the bottom of the tank. As its name implies, the floating suction floats on top of the liquid, lowering its position as the level of the liquid falls.

When the tank is empty the float rests on the bottom but as the tank is filled the float rises on the surface of the liquid, drawing the pipe upward with it.

With this arrangement, clear liquid is always drawn from the top of the supply in the tank, thereby preventing any settlings and sediment, which may have precipitated and accumulated at the bottom of the tank, from being drawn into the pipe line.

The Float Suction consists of the float proper, float clamp, float flange, swing elbows and nipple, and is furnished in three standard pipe sizes, viz.: 1¼ in., 1½ in., and 2 in. The piping is not furnished standard but will be supplied at extra cost when desired. The lengths of these pipes depend upon the size of the tank in which installation is to be made (see reverse side for dimensions).

Figure 280 can be installed in either underground or above-ground tanks, providing they are equipped with a manhole through which entrance can be gained into the tank for making the installation.



Close-Up of Float and Inlet Flange

An opening is provided at the point where the float is attached to the riser pipe (see illustration above), so the liquid can enter the pipe, always from the surface. It flows down, through the swing joint, and then upward through the vertical pipe and is handled from that point just as in any other case.

See Reverse Side for Installation Instructions

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TORONTO LONDON BERLIN PARIS ROTTERDAM

Installation Instructions

FIGURE 280

Installation is very simple. An ordinary suction pipe is extended from the top of the tank to the bottom with the swing joint furnished attached at the bottom of this vertical pipe. Another length of pipe extends at right angles or along the bottom of the tank, from this swing joint. At the end of this pipe the float, which is approximately 9 in. by 16 in., is fastened by the flange and clamp. This length of pipe must be enough longer than the diameter of the tank to prevent the pipe from swinging upward into a vertical position or one parallel with the other suction pipe. The angle of elevation between the vertical and swing pipe should never be less than 30 degrees when the latter is in its topmost position (see "A" and "B" in illustration below). This will avoid any possibility of the suction pipe sticking, preventing the float from dropping back as the level of the liquid is lowered.

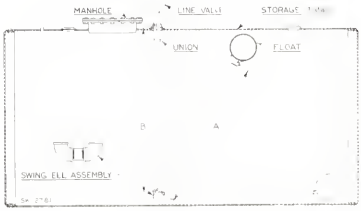

CHART OF PIPE LENGTHS

Tank Dia.	51 7/8"	54"	60"	72"	84"	96"	120"	126"
A	44"	48"	55"	68"	82"	96"	124"	130"
B	48 5/8"	50 3/4"	56 3/4"	68 3/4"	80 3/4"	92 3/4"	116 3/4"	122 3/4"

The above sketch and chart show the dimensions of the vertical and swing pipes for tanks of various diameters.

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Tank Car Connections

The Bowser Figures 325 and 327 Tank Car Connections are manufactured and designed for convenient draining of liquids from tank cars into underground storage tanks.

The Figure 325 Hose Connection is designed to be placed on the end of the fill pipe so that the hose may be easily connected. The connection is provided with a cap, shown in illustration below, which makes a perfectly tight fit when in place. It is made in 3 in. size only. The ideal method of installing the Figure 325 is to place it in a Figure 158 Fill Box which is especially constructed for use with it. (See Figure 158 Fill Box Bulletin.)

Figure 325 Hose Connection and Cap on Fill Pipe, with Figure 158 Fill Box

The Figure 327 Tank Car Connection fits on to the discharge opening in the tank car and reduces the usual 5 in. male hose thread to 3 in. hose connection so that the hose may be connected at this point and to the Figure 325 Hose Connection. In this manner the tank car is allowed to drain properly and without further attention. It is made in 3 in. size only.

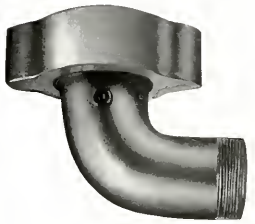
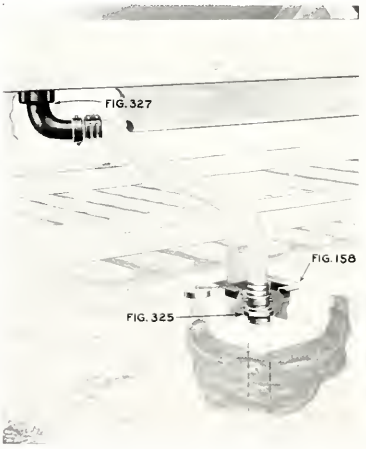


Figure 327

Illustration, indicating clearly the method of installing and using Tank Car Connections, is shown *below*.



Method of Installing and Using Tank Car Connections and Hose

Suction Sleeve with Companion Flange and Elbow

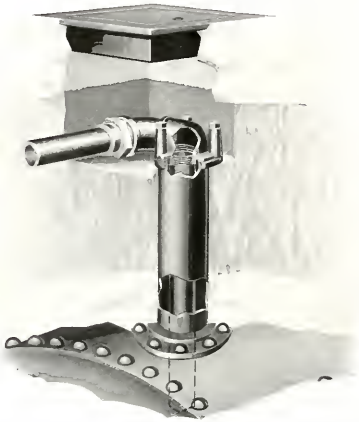


FIGURE 326 IN FIGURE 158 FILL BOX

The Figure 326 Suction Sleeve with Companion Flange and Elbow, is designed for the purpose of providing easy access to the foot valves in an underground storage tank in case it becomes necessary to remove them for any reason. It is particularly applicable to those installations where the storage tank is buried under concrete and should be used in connection with Fill Box, Figure 158.

The assembly consists of a suction stub, suction sleeve, companion flange and elbow, street ell and street union.

To remove the foot valve it is necessary, only, to loosen and remove the three hexagon nuts on the companion flange, disconnect the suction line at the street union and lift out the suction stub and foot valve.

A gasket inserted in the companion flange prevents water from entering the tank at this point.

In ordering this accessory (for tanks already installed) it is necessary to give diameter of tank and depth of burial. Tank must have a 3½ in. opening at flange. Suction Sleeve and suction pipe are furnished standard in lengths required for all tanks buried to a depth of not more than 54 in.

The street union which connects to the suction line can be furnished for either 1½ in. or 2 in. pipe.

Shipping weight (approx.), 40 lbs.

INTERNATIONAL TYPE PRINTING
1-1-C 4-31-25

Automatic Vent Valve

Figure 781

The problem of venting the discharge side of gravity meters when used for unloading truck tanks is one that has received a great deal of attention on the part of equipment manufacturers and Oil Company engineers.

First of all, it is obvious that maximum speed of operation is secured only when full advantage is taken of the total head (from liquid level in the truck tank to top of fill pipe) on the meter.

Secondly, if the hose at the outlet of the meter is not vented at the time the compartment becomes empty, the meter will over-register due to the momentum of the freely-operating meter mechanism itself, together with the siphonic head on the outlet side of the meter.

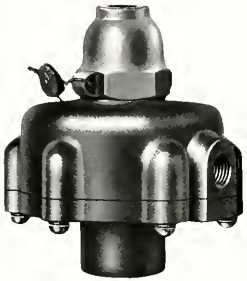


FIGURE 781

The Bowser Figure 781 Automatic Vent Valve accomplishes the foregoing requirements in a positive, fool-proof manner, insuring accuracy of measurement at all times together with maximum speed of operation.

When unloading a truck tank by gravity there is a difference in elevation between the discharge faucet and the fill pipe leading to the underground tank. As the hose fills with liquid, this difference in elevation makes available a siphonic force which tends to pull the liquid through the meter.

The Figure 781 Automatic Vent Valve is designed to allow the siphonic pull to exist until the compartment is practically empty at which time it automatically vents the hose, breaks the siphonic pull and permits the meter to come to a natural stop without taking in and registering any air.

The diagrammatic illustration at the right shows the Figure 781 Automatic Vent Valve connected to the Bowser Xacto Meter inlet line at the top of the Bowser Figure 730 Strainer. The air vent pipe (A) is connected between the valve and the shut-off faucet and should terminate on the discharge side of the shut-off poppet. The air vent pipe (B) should be connected at the top of the valve and terminate in the upper portion of the can box, as shown in illustration. Vent pipe (B) provides for possible back pressures on the hose, in the exceptional cases where the fill pipe is at a higher elevation than the meter faucet, preventing the possibility of gasoline backing up from the faucet through the valve and then spilling out on the ground or truck.

There is no possibility of gasoline by-passing the meter.

The valve is opened and closed by the head pressure of the liquid in the truck tank. As the tank fills, the valve closes and remains closed until the liquid level is reduced to such an elevation as will allow the valve to open. When closed, the hose is not vented and the siphonic pull exists. When open, the hose is vented and the pull does not exist.

The Figure 781 is adjusted so that it vents the hose and breaks the siphonic pull as the liquid level approaches the bottom of the tank. It is tested and sealed before shipment to insure efficient operation in service. It is furnished

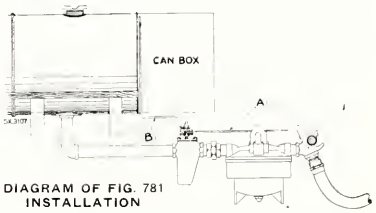


DIAGRAM OF FIG. 781
INSTALLATION

standard with 4 feet of $\frac{3}{8}$" O. D., 20 Ga., copper tubing and fittings necessary for making connection between valve and faucet. Copper tubing necessary for venting to top of tank is not furnished standard.

Figure 781, by virtue of its obvious importance and advantages, must be specified on all gravity-operated Xacto Meter installations on truck tanks.

Check Valve

Figure 780

Figure 780

The Figure 780 is a spring loaded check valve especially adapted for use on fuel oil delivery trucks which are equipped with meters and power take-off. By its use, the flow of liquid is started and stopped simultaneously with the starting and stopping of the pumping unit. With this arrangement the operator is enabled to control the flow and observe the meter reading at one point on the tank truck so that when the desired quantity has been delivered, the pumping unit can be stopped, at which time the flow automatically and immediately ceases.

Installation of the valve may be made either at the outlet of the meter or at the end of the hose.

The valve consists of a brass body with composition valve disc. It is actuated by a spring which releases under five pounds pressure and which in turn causes the valve to open, allowing the liquid to pass through—and stopping it instantly when this pressure is relieved. It is furnished in $1\frac{1}{2}$" and 2" sizes, shipping weights of which are approximately 12 to 15 pounds.

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BOWSER
DEPARTMENT OF PRINTING
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Advertising Globe

Standard Globe—White Letters on Green Background

Bowser's Advertising Globe is especially designed for installation on dispensing outfits to effectively and attractively advertise the sale of motor fuels. The globe can also be used very effectively on ornamental posts of gasoline service stations or placed outside at vantage points to indicate that motor fuels are served on the inside.

The standard globe is furnished with white letters on a green background. The word "Gasoline" in white letters against a dark green background, makes it stand out very clearly and attractively. Glass discs are lettered the same on both sides. Illuminated at night, its appearance is greatly enhanced.

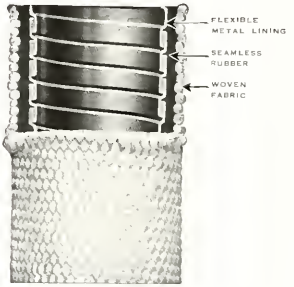
The globe is an all metal black frame 18 in. in diameter with 15 in. diameter glass discs. These discs are securely set in metal frames to eliminate the danger of being loosened by vibration or jars to which the pump may be subjected. The frame, too, is securely fastened to the pump canopy.

The construction of the globe is such that new designs or names may be obtained and inserted at any time—it being unnecessary to purchase an entirely new globe to advertise the fact that a different kind of motor fuel is being handled. Your own trade mark can be made up in this globe, in quantities at a reasonable extra cost.

The globe has a 6 in. base, but can be adapted to any other size by means of special "adapters."

Shipping weight approximately 15 lbs.

Gasoline Hose



Section of Standard Hose Cut Away to Show Its Durable Construction

The Bowser Special Gasoline Hose is constructed under specifications which our years of experience have proved to insure a hose which will resist the solvent action of gasoline, and give the maximum of service in usage.

The hose is lined with flexible metal tubing over which and interlocking with it, is a layer of rubber, free from air pockets and pittings. On top of the rubber layer is a tough piece of heavy woven, green fabric which is tightly fitted. The hose is then vulcanized, which securely cements all three units into one, making a hose which admirably meets all requirements in the handling of gasoline and other motor fuels.

The Bowser Special Gasoline Hose is furnished standard in the following sizes: 3/4 in., 1 in., 1 1/4 in., 1 1/2 in. and 2 1/2 in. The 3/4 in., 1 in. and 1 1/4 in. are furnished in 8, 10 and 12 ft. lengths, the 1 1/2 in. is furnished in 8 and 10 ft. lengths. These sizes are all furnished with male and female connections. The 2 1/2 in. hose is furnished in lengths of 10, 12 and 15 ft., with 3 in. female connections on both ends. The 1 in. size furnished with Xacto Sentry is 9 ft. 6 in. in length and is furnished with male connection at both ends. The 1 1/4 in. size furnished with the Airport Fueling Systems is 50 ft. in length and is fitted with male and female connections.

SHIPPING WEIGHTS (Approx.)

8 ft. length 3/4"	8 lbs.
10 ft. length 3/4"	10 lbs.
12 ft. length 3/4"	12 lbs.
8 ft. length 1 "	10 lbs.
10 ft. length 1 "	12 lbs.
12 ft. length 1 "	14 lbs.
8 ft. length 1 1/4"	13 lbs.
10 ft. length 1 1/4"	16 lbs.
12 ft. length 1 1/4"	25 lbs.
8 ft. length 1 1/2"	20 lbs.
10 ft. length 1 1/2"	25 lbs.
10 ft. length 2 1/2"	45 lbs.
12 ft. length 2 1/2"	55 lbs.
15 ft. length 2 1/2"	65 lbs.
9 ft. 6 in. length 1"	11 lbs.
50 ft. length 1 1/4"	75 lbs.

PRINTED IN U. S. A.
BOWSER
DEPARTMENT OF PRINTING
LIC 6 29 2875

This bulletin contains information that will be of value to you in the operation and maintenance of your equipment. Preserve it for future reference.

BOWSER
Reg. U. S. & Can. Pat. Off.

GUARANTY AND SERVICE POLICY

Since 1885 S. F. Bowser & Company, Incorporated, the pioneer designers and manufacturers of oil and gasoline handling and dispensing equipment, have been recognized not only as the leading manufacturers in this field, but as the manufacturers who have always made highest quality their primary requirement. Patient research, skillful engineering and designing, use of the very highest quality materials, and skilled and experienced workmen have all contributed to this well-merited reputation.

This assurance of quality which is a fundamental manufacturing policy, together with the widespread organization of sales and service offices maintained by this company for the convenience of Bowser customers, all operate to make a guaranty from this company valuable and a real protection to Bowser customers.

We take pleasure in outlining our guaranty and service policy in the following paragraphs:

GUARANTY

We guarantee all parts of the equipment shipped under this agreement for one year and no more from date of invoice thereof against defective material or workmanship (but not against damage caused by accident, abuse or faulty installation) when the equipment is installed in accordance with our specifications, and will repair or replace free of charge (F. O. B. factory), all such defective parts if returned to the factory, charges prepaid. Our liability for damages caused by any such defective parts shall be limited to such repair or replacement and in no event shall we be liable for indirect or consequential damage.

In order that the equipment sold by this company may find its fullest usefulness in the hands of the purchaser, it is our practice to furnish complete detailed instructions with all major items of equipment, covering installation, operation and care. These instructions should be carefully read and followed before the equipment is placed in service. S. F. Bowser & Company, Incorporated, cannot assume responsibility in connection with any installation difficulties such as leaks, dirt, and water in the lines and tanks, foot valve trouble, and similar difficulties with the equipment or operation.

Our responsibility in connection with any equipment is limited to the use of that equipment for the purposes and in accordance with the conditions under which it was sold to operate.

For the purpose of close co-operation with the service men or mechanics of our customers, either for purposes of instruction, supervision, or inspection of installations, or repair work, we maintain competent service engineers and a minimum stock of repair parts at strategic points throughout the country. These men are available on call and at regular prices. If the services of a service mechanic are desired for any of these reasons, we will furnish the nearest available mechanic, charging for his time, transportation, and all expenses. Our service mechanics are authorized to collect for their services and expenses upon completion of the work.

To insure maximum use from the investment which our customers may have made in Bowser products, it is our policy to furnish repair parts at our regular charge for a period of ten years after shipment of such goods. All orders for parts amounting to $10.00 or less will be shipped C. O. D., regardless of customer's financial standing or rating.

Where motors are being furnished, if incorrect information regarding current specifications is furnished at the time the order is placed, a charge will be made to cover the cost of the exchange. The minimum charge for such exchanges is $5.00, and purchaser will be required to pay all transportation charges.

We will not accept the return of unused goods except by written agreement with S. F. Bowser & Company, Incorporated, Fort Wayne, Indiana, and in such cases a minimum handling charge of 10% of the original purchase price of the material returned will be made.

If goods are lost or damaged in transit, we will protect the purchaser for such loss or damage (not including contingent losses) by replacing the lost or damaged equipment, provided purchaser furnishes us within fifteen days from delivery of the goods, the original freight bill bearing the transportation agent's acknowledgment of such loss or damage. It is important that all shipments be unpacked and inspected soon after delivery, in order that the shipment may be checked with the bill of lading and any shortage or concealed damage discovered. In the event of any loss or damage, the agent of the transportation company should be called to inspect the shipment and note the loss or damage on the freight bill.

All requests for service or repair parts should be directed to S. F. Bowser & Company, Incorporated, Fort Wayne, Indiana, or one of its established offices, and full information should be given concerning the difficulty experienced and the stock numbers of the equipment involved.

Accessories for which there is an extra charge are frequently shown in installation bulletins for the purpose of indicating the proper way to install them or their function in connection with the equipment described by the bulletin. The carbon copy of your contract will show if you have purchased any of these.

S. F. BOWSER & CO., Inc., Fort Wayne, Ind., U. S. A.

INSTRUCTIONS FOR INSTALLING AND OPERATING BOWSER TANK TRUCK ACCESSORIES

The information given in this bulletin comprises the necessary instructions for installing and operating the various items of equipment which we manufacture for tank truck use. Kindly follow these instructions and suggestions carefully and communicate direct with our Engineering Department for any information of a special nature not included in these pages.

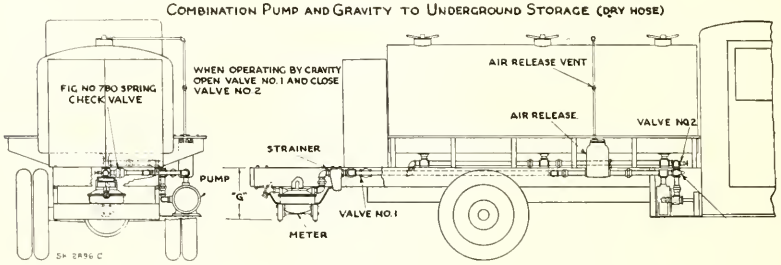


ILLUSTRATION "K"

The above illustration shows a tank truck equipped with power pump., Figure 764 Meter, Figure 775 Combination Air Release and Strainer.

Equipped in this manner the truck can be unloaded either by gravity or pump pressure using a dry hose.

The Combination Air Release and Strainer, Figure 775, should be installed in the horizontal line, fastened securely under the can rack and vented into the tank dome.

The Figure 764 Xacto Meter is attached to the back of the truck as shown in Illustrations "K", "L" and "M".

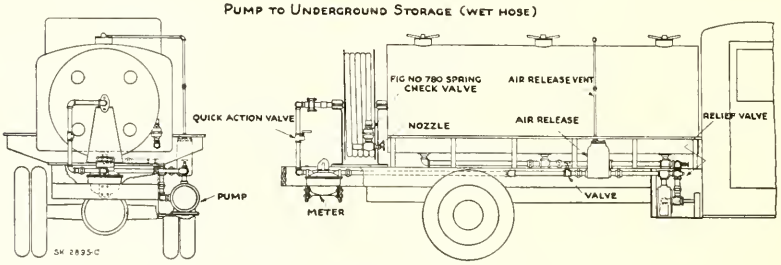
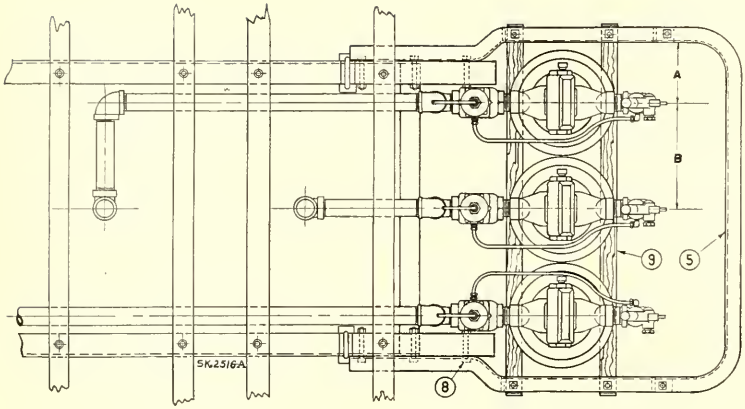


ILLUSTRATION "L"

This illustration shows the proper method of installing power pump, Figure 764 Xacto Meter, Figure 775 Combination Air Release and Strainer and Hose Reel.

When equipped as illustrated here the truck is unloaded by pump pressure only, using a wet hose.

The method of installing the Figure 764 Meter and Figure 775 Combination Air Release and Strainer is similar to that described by Illustration "K".



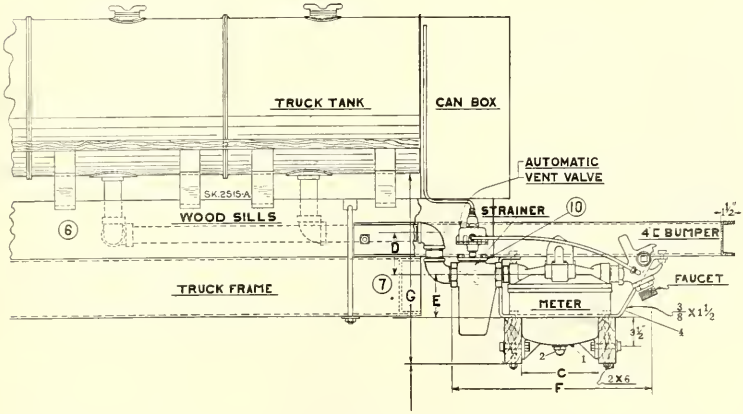


ILLUSTRATION "M"

	A	B	C	D	E	F
1½"	7¾"	12½"	9"	5"	4½"	24"
2"	8⅝"	14¼"	10¼"	8"	5⅝"	27¾"

Illustration "M" shows the proper arrangement for installing Xacto Meters on the back end of a tank truck. In most installations of this kind it will be necessary to provide a support for the meters. This support (5) may be of 4-inch channel iron formed as shown in the illustration. The end of this support should be bolted to the wood sill (6) on top of the tank frame (7), using six ½ inch bolts (8) with lock washers under nuts. This support should extend back far enough to provide ample clearance for the faucet handle. The width of this support will vary depending upon the number and sizes of the Xacto Meters to be installed. The table gives dimensions for the 1½ inch and 2 inch meters.

The meters are carried by two 2x6 inch hardwood cross bars (9) bolted to two ⅜x1½ inch stirrups (4). These stirrups are bolted to the under side of the support (5). The distance between cross bars is shown by dimension (C) in the table. The stirrups should be 9½ inches below the center of the outlet pipe for the 1½ inch meter and 13⅝ inches below the center for the 2 inch meter.

To install the meters, first remove the faucets from the back end of the truck tank. See that the piping from the compartments is changed to give the necessary clearance between meters as shown by (B) in the table. Attach the Strainer (10) to the inlet of the meter. Set the meter in the support provided for it and connect the Strainer to the supply pipe with union. Bolt the meter to the cross bars and be sure that all bolts are tight. Lock washers should be used wherever necessary.

The faucets may be of any reliable make. They should be attached to the outlet of the meter.

The screen in the Strainer is made accessible for cleaning by simply removing cap (10), Illustration "M".

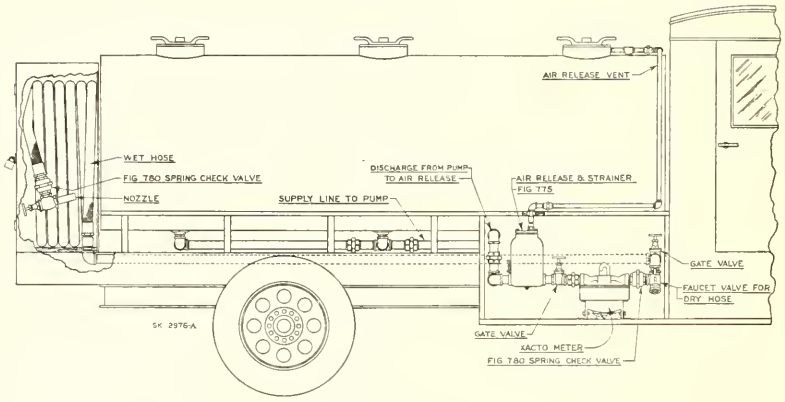


ILLUSTRATION "Q"

In Illustration "Q" the meter and combination air release and strainer are located in a box under the can rack at the front end of the truck. The pump is situated on the opposite side.

The hose reel has been omitted and the hose is wrapped around cleats fastened in the can box.

The air release is fastened under the can rack and vented back to the tank. Note the location of the Figure 780 Spring Check Valve, ahead of the meter.

The arrangement of piping is such that the truck can be unloaded by use of either a dry or wet hose.

By the proper arrangement of the valves the flow can be controlled either at the meter or at the end of the hose.

FIGURE 775
AIR RELEASE AND STRAINER

The Figure 775 Air Release and Strainer should be installed between the meter and pump. It should be placed in the horizontal line. The vent (6) should be connected back to the storage tank using ¾ inch pipe.

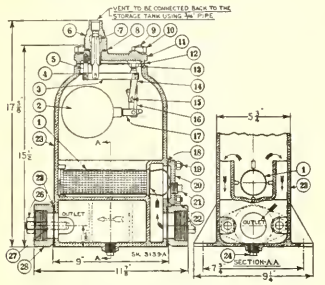


ILLUSTRATION "U"

The strainer (1) should be removed at regular intervals and cleaned. Before removing the strainer cap (20) remove the plug (21) and drain the strainer chamber.

FIGURE 781
AUTOMATIC VENT VALVE

The Figure 781 is to be used in the gravity line from a tank truck to the Figure 764 Xacto Meter. It can be connected direct to the pipe line strainer, as shown in Illustration "M", or to the pipe line back of the strainer. The cover of the Bowser Fig. 730 strainer is drilled and tapped for the installation of this vent valve.

Remove the ½" plug in the top of the strainer, connect the valve to the strainer, using the ½" nipple furnished.

Drill the shut off nozzle on the outlet side of the poppet and tap with ¼" pipe tap. Screw the ¼" compression elbow furnished, in this opening. Into the side opening of the vent valve, screw one of the ¼" compression fittings furnished and connect the vent valve to the discharge nozzle with ⅜" copper tubing furnished (See Illustration "M").

The top of the vent valve should be vented. This vent pipe may be either ⅜" copper tubing or ¼" pipe. If pipe is used the compression coupling in the top of the vent valve is not needed and a ¼" union should be placed in the line near the strainer. The vent pipe should be run to the top of the tank truck and be protected against dust and the weather. Illustration "M" shows this pipe running to the top of the can box. This pipe when installed in this manner should be clamped to the can box or tank. The extra compression coupling is furnished in case it is desired to connect the air vent into the top of the tank. The air vent valve, before leaving our factory, is tested, adjusted and sealed, to be fully opened between a 14" and 17" head. This head can be increased or decreased by breaking the seal wire (9), Illustration "B", removing vent cap (1) and turning the poppet adjusting screw sleeve (2) up to increase or down to decrease the head in the tank.

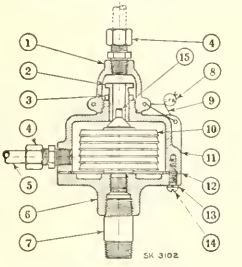


ILLUSTRATION "B"

After adjustment is made, make sure the lock nut is tightened and vent cap (1) is replaced and sealed.

STRAINERS

A strainer should be placed in the pipe line, on the inlet side of the meter, to keep any foreign particles, in the oil or pipe line, out of the meter. Foreign particles will cause the meter to register inaccurately.

DIMENSIONS

Size	A	B	C	Width
¾"	5½"	6⅛"	8½"	3¼"
1¼"	5½"	6⅛"	8½"	3¼"
1½"	6"	7⅛"	9¾"	3½"
2"	7"	8¼"	11"	4"
*2½"	8¾"	9 11/16"	13½"	6"
*3"	8¾"	9 11/16"	13½"	6"
*4"	16½"	13"	20¼"	10"

* Flanged Pipe Connections.

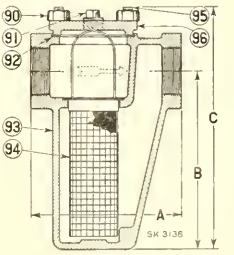


ILLUSTRATION "C"
Fig. 730 Strainer

INSTRUCTIONS FOR ORDERING REPAIR PARTS

When ordering repair parts, give symbol number, part number and name of piece wanted, as found in the list below. Following the above instructions will insure prompt shipment.

Parts list for the 2 inch Figure 775 Air Release. Part No. 95809

Symbol No.	Part No.	Name
1	95814	Screen Assembly
2	90568	Float
3	95826	Valve Lever
4	30115	3/16 x 1/2 Cotter Pin
5	95827	Lever Stud
6	95204	Valve Body
7	95210	Valve Stem
8	95203	Gasket
9	94890	5/8" Dia. Stud
10	28906	5/8-11 Hex. Nut
11	95812	Top Cover
12	94864	Gasket 5 1/2" O. D.
13	28952	3/8-16 Jam Nut
14	95825	Link
15	95713	3/16" Clevis Pin
16	95813	Float Lever Stud
17	95811	Float Lever
18	94874	Gasket—3 1/2" O. D.
19	94885	7/16" Dia. Stud
20	94872	Strainer Cap
21	13623	1/2" Pipe Plug
22	28903	7/16-14 Hex. Nut
23	95810	Air Release Body
24	13623	1/2" Pipe Plug
25	94902	Gasket
26	28906	5/8-11 Hex. Nut
27	29387	Stud
28	94936	2" Flange
28	94937	1 1/2" Flange

Parts list for the Figure 781 Automatic Vent Valve Part No. 95628

Symbol No.	Part No.	Name
1	95887	Vent Cap
2	95580	Poppet Adj. Sleeve
3	95579	Adj. Sleeve Lock Nut
4	10175	1/4" Compression Connector
5		1 pc. 3/8" O. D. x 4 ft. Copper Tubing
6	95585	Valve Bottom
7	14883	1/2 x 1 3/4" Nipple
8	34081	Seal Lead
9	34082	Seal Wire
10	95583	Metal Bellows
11	95581	Valve Body
12	95584	Valve Body Gasket
13	29260	3/8" Lock Washer
14	24208	No. 10-24 x 5/8" R.H.M. Screw
15	95582	Poppet
16	10176	1/4" Compression Elbow

Revision
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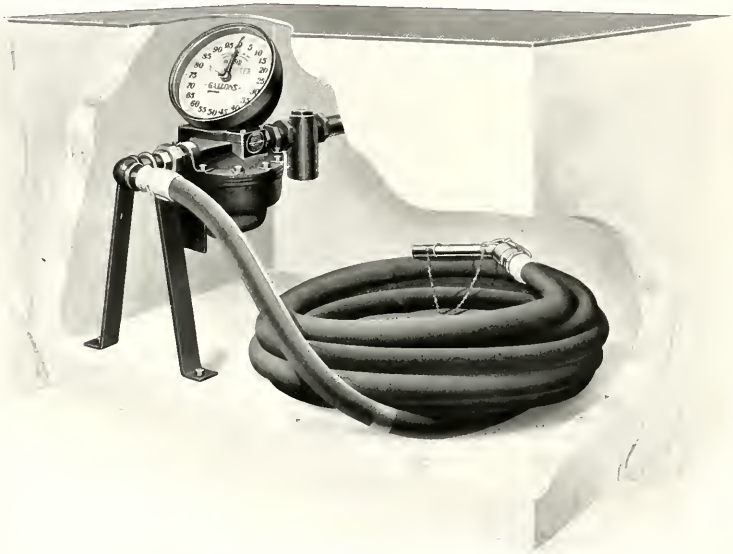
Airport Fueling System



Representative installation of Figure 232 Serving Equipment, consisting of Xacto Meter, Strainer and Nozzle. Gasoline hose is not furnished standard.

Note the Xacto Meter, Figure 779, with 10 inch diameter, glass-covered, 100-gallon recording dial, inclined at an angle of 45°—plainly visible at a remote distance—enabling one attendant to service planes in less time, and more accurately.

BOWSER Airport Fueling System [FIGURE 232]

THE Bowser Airport Fueling System, Figure 232, is an inexpensive, compact, practical fueling system for serving gasoline to aircraft at airports or landing fields. This system provides for pumping, measuring, recording and delivering gasoline to the planes. It is furnished in two standard sizes, the smaller with $1\frac{1}{4}$ inch pumping unit and meter capable of delivering from 16 to 18 gallons per minute and the larger with $1\frac{1}{2}$ inch pumping unit and meter capable of delivering from 33 to 35 gallons per minute.

This Fueling System is suitable for use at small airports and landing fields where the fueling requirements do not warrant the investment for the more complete and convenient facilities provided in the Figure 230 Bowser Airport Fueling System.

The System is simple, it will serve gasoline speedily, it is efficient and economical in operation, it provides positive, accurate gasoline delivery without loss or spillage, it maintains a constant check on all gasoline handled.

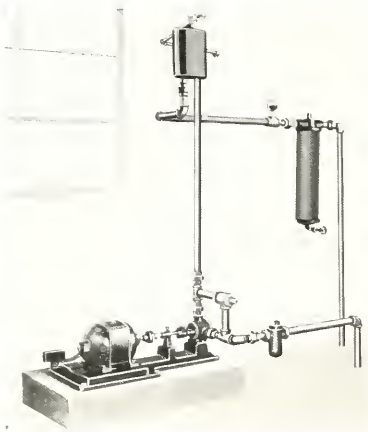
The equipment furnished standard is a complete pumping unit consisting of pump, motor, air release, strainer, relief valve, pressure gauge and filter—and serving equipment consisting of a Bowser Xacto Meter, equipped with 100-gallon dial inclined at an angle of 45 degrees, strainer and hose nozzle fitted with protective slip cap. On the $1\frac{1}{2}$ in. system a motor starter is also included as standard equipment with the pumping unit and the motor is connected to the pump by gearing. (See illustration on next page—pumping unit for $1\frac{1}{4}$ in. system is shown on this page.) Gasoline hose is not furnished standard—may be supplied at extra cost.

The serving equipment is intended for installation in a pit (pit furnished by purchaser) set flush with the ground level, at a point of convenient service on the field. In this way the serving equipment offers no ground hazard, and when 50 feet of delivery hose is used, planes can be served within a radius of 50 feet in any direction.

Planes can approach within the serving radius of the fueling pit, fill up with clean filtered gasoline—in any quantity—and then proceed on their flight or taxi to the hangar or line without interference of any kind.

All gasoline is passed through an efficient filtering unit which removes dirt and moisture before it is dispensed to the plane.

Nozzle control of the flow of gasoline at the discharge point affords protection against spilling or overflowing—eliminating fire hazards. The nozzle is fitted with a screen of fine mesh. A slip cap is furnished for the nozzle tip to prevent contamination by dirt and water between serving operations.



The above illustration shows the $1\frac{1}{4}$ inch pumping unit consisting of direct connected $1\frac{1}{4}$ inch rotary pump with by-pass, $\frac{1}{2}$ h. p. motor, air release, filter and strainer.

Gasoline is accurately measured by the Bowser Xacto Meter—a positive volumetric displacement meter—accurate under all rates and volumes of flow. It easily meets the tolerances established by the U. S. Bureau of Standards, the Weights and Measures department of every State in the Union and the Department of Weights and Measures of the Dominion of Canada.

The metering unit is the Special Figure 779 Xacto Meter designed for fueling pit service. It is equipped with a large 10 in. diameter, 100-gallon, glass-covered dial, inclined at an angle

Airport Fueling System [FIGURE 232]

of 45 degrees, making the dial graduations and movement of the hands clearly visible at a long distance. A complete and accurate record of the exact quantity of gasoline being delivered, from 1 quart to 100 gallons, is shown on the dial. One operator can handle the complete fueling operation—quicker, better and more accurately.

The dial hands operate clockwise and may be set back to "0" at any time. The large hand makes one complete revolution of the dial for each 5-gallons discharged—the small hand advances to the next 5-gallon graduation when the large hand has made the complete revolution. The large numerals indicate gallons in 5-gallon multiples—the small numerals indicate single gallons—outer edge graduations indicate quarts.

The dial is provided with an opening through which the figures of a continuous gallon counter are clearly visible. This counter maintains a continuous and accurate record of the total number of gallons dispensed. It records to 100,000 gallons and repeats.

A complete and compact pumping system, located in a corner of the hangar or repair shop, provides speedy and efficient delivery of gasoline to the serving equipment on the field.

The cost of maintenance is small—depreciation is negligible.

For complete information on the larger Bowser Airport Fueling Systems, see Figure 230 Bulletin.

PUMPING SYSTEM

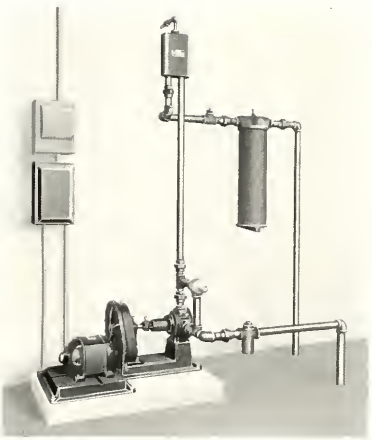
Gasoline is supplied to the Serving Equipment by a complete pumping system, located in the hangar or pump house and controlled by a vapor-proof switch located in the pit.

The pumping unit furnished with the 1¼ in. Figure 232 Fueling System, consists of a 1¼ in. rotary pump direct connected with ¾ h.p. motor, air release, by-pass, relief valve, strainer, pressure gauge and filter (see illustration on opposite page). It is capable of delivering from 16 to 18 gallons of gasoline in a minute. The by-pass installed on the pump is controlled by a relief valve which opens at 15 pounds pressure, allowing gasoline to circulate after discharge from hose has been stopped, and as long as pumping unit is in operation.

The air release installed in the discharge line near the pump provides for the separation and escape of any air in the liquid, thus assuring a solid flow of gasoline to the meter.

A line strainer is placed in the suction line ahead of the pump to catch any heavy dirt particles which may be in the gasoline.

A Bowser Centrifugal Filter removes any water, moisture or dirt from the gasoline, assuring the delivery of dry, clean fuel.



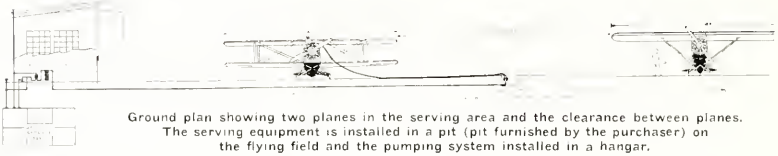
The above illustration shows the 1½ inch pumping unit consisting of 1½ inch rotary pump complete with by-pass and geared to 1 h. p. motor. It also includes air release, filter, strainer and motor starter.

The pumping unit furnished with the 1½ in. System includes a 1½ in. rotary pump geared to a 1 h.p. motor equipped with starter. It, also, is equipped with by-pass, relief valve, air release, filter, strainer and pressure gauge. The air release, filter and strainer are of 1½ in. size for use in connection with this system. This pumping unit is capable of delivering from 33 to 35 gallons per minute.

The pump furnished with both the 1¼ in. and 1½ in. systems bears the Underwriters' Label.

With both systems is included a line valve for installation in the suction line immediately above the storage tank.

BOWSER Airport Fueling System [FIGURE 232]



Ground plan showing two planes in the serving area and the clearance between planes. The serving equipment is installed in a pit (pit furnished by the purchaser) on the flying field and the pumping system installed in a hangar.

SPECIFICATIONS

STANDARD EQUIPMENT

The Figure 232 Airport Fueling System consists of serving equipment, fully equipped except for hose, for installation on the flying field and one complete pumping system for installation in the hangar or shop.

SERVING EQUIPMENT

METER: Figure 779, size 1 1/4" or 1 1/2" depending upon size of system; dial records to 100 gallons, in multiples of quarts and gallons; hands may be set back to zero at will of operator; continuous counter records to 100,000 gallons and repeats; dial inclined at an angle of 45 degrees, 10" diameter, hands operate clockwise.

NOZZLE: With 1 1/4" System, nozzle is of pistol type (Figure 197). Tip is 1 1/8" in diameter and 7" long. With 1 1/2" System, a 1 1/2" pistol type nozzle (Fig. 197), with 1 1/2" x 7" tip is furnished.

Both nozzles are fitted with screens and also with protective slip caps chained to nozzle.

STRAINER: Figure 757, 1 1/4" or 1 1/2" depending upon size of system, cast iron body with removable screen—installed on inlet side of meter to prevent dirt particles from entering.

PUMPING SYSTEM

PUMPING UNIT:

PUMPS. With 1 1/4" System is furnished a 1 1/4" Figure 1709 rotary pump direct connected to 1/2 h.p. motor, capable of delivering from 16 to 18 gallons of gasoline per minute. With 1 1/2" System a 1 1/2" Figure 1709 rotary pump is furnished, geared to 1 h.p. motor, capable of delivering from 33 to 35 gallons per minute. Pump and motor in each case are substantially mounted upon heavy cast iron base.

MOTOR: Vapor proof, 110-220 volts, single phase, 60 cycle; may be connected to 2 or 3 phase 60 cycle alternating current. All orders must specify current, voltage, phase and cycles. (A small additional charge is made for motors for current other than those given above.)

STARTER: Cutler-Hammer Starter to protect motor against overloading when motor is started; furnished to suit current specifications. (Furnished with 1 1/2" System only).

BY-PASS: Installed on pump; by-passes gasoline back to tank when pump is operating and nozzle, at end of hose, closed; controlled by relief valve set at 15 lbs.

PRESSURE GAUGE: Installed in discharge line from pump; indicates pressure on lines; records to 60 lbs.

AIR RELEASE: Figure 773, 1 1/4" or 1 1/2" inlet and outlet openings, depending upon size of system; separates and releases air from liquid passing through line.

FILTER: Figure 255-A with 1 1/4" openings furnished with 1 1/4" system; length over all 30", diameter 6". Figure 255 with 2" openings bushed to 1 1/2", furnished with 1 1/2" system, length over all 34", diameter 8", positively separates all water from gasoline.

STRAINER: Figure 757, 1 1/4" or 1 1/2" size depending upon size of system, cast iron body with removable screen; for installation in suction line, ahead of pump.

LINE VALVE: 2" openings; for installation in suction line to pump, above top of tank.

SHIPPING WEIGHT:

1 1/4" System complete	400 lbs.
1 1/2" System complete	650 lbs.

EQUIPMENT FURNISHED AT EXTRA COST

ADDITIONAL SERVING EQUIPMENT: One or two additional serving units for connection to same pumping unit.

TANK AND FITTINGS: Cylindrical storage tank of any capacity up to 25,000 gallons complete with all necessary flanges, suction and fill pipe.

GASOLINE HOSE: 50 ft. of 1 1/4" or 1 1/2" special gasoline hose, depending upon size of system.

*(For complete information on these items, see individual Bulletins)

BOWSER
Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934
Subject to Change Without Notice

Figure 764
Xacto Meters
(Standard)

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Elfin	3/4" Size	35	A	$ 75 00		STANDARD EQUIPMENT
2C0	Elide	1 1/2" Size	120	A	120.00		
2C0	Elisa	2" Size	145	A	144.00		
2C0	Elist	2 1/2" Size	285	A	264.00		
2C0	Elland	3" Size	375	A	288.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER
Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934
Subject to Change Without Notice

Figure 764
Xacto Meters
(Aluminum Type)

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Ellat	2" Size	75	A	$161.00		STANDARD EQUIPMENT
2C0	Ellav	2 1/2" Size	190	C	300.00		
2C0	Ellax	3" Size	210	A	324.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER
Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934
Subject to Change Without Notice

Figure 764-T
Standard Xacto Meter With Temperature and Specific Gravity Adjustment Dial

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Elmar	1 1/2" Size	135	D	$145 00		STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 765

Automatic XACTO METER

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx)	Shipping Date (Approx)	PRICE
2C0	Elmara	1½" Size	125	A	$170.00
2C0	Elmarer	2" Size	160	A	194.00
2C0	Elmarest	*Dial Assembly Only ...		B	55.00

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

*Price includes return of counter being replaced and meter cap, which are to be returned to Fort Wayne or San Francisco, transportation charges prepaid.

If customer has a Fig. 778 Xacto Meter and wishes to exchange the dial assembly for a Figure 765 dial assembly, price is $45.00 and the return of the Fig. 778 dial assembly, transportation charges prepaid, to Fort Wayne or San Francisco.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 766

Xacto Meter Barreling Unit

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE	
2C0	Elmarra	1½" Size	150	D	$337.00	STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 766-A

Xacto Meter Barreling Unit

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE	
2C0	Elmase	1½" Size	150	D	$349.00	STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 767

Xacto Meters

One-Quantity Pre-determined

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Elmaw	1½" Size	135	D	$180 00		STANDARD EQUIPMENT
2C0	Elmor	2" Size	165	D	214 00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 768

Xacto Meters

One-Quantity Pre-determined
With Remote Control Switch

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Elmutor	1½" Size	160	D	$198 00		STANDARD EQUIPMENT
2C0	Elmux	2" Size	190	D	232 00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 776

Xacto Meter

All Metal

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Elnor	¾" Size	45	A	$ 85.50		STANDARD EQUIPMENT
2C0	Elnut	1½" Size	130	A	138.00		
2C0	Elnuxy	2" Size	205	A	162.00		
2C0	Elnyar	3" Size	390	C	324.00		
2C0	Elnyos	4" Size	1050	F	1060.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934
Subject to Change Without Notice

Figure 778-T
Figure 764-T Equipped With Fig. 778 Dial

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2CO	Elnnar.	1½" Size	145	B	$170 00		STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-8-34
2326

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE AUGUST 15, 1934
Subject to Change Without Notice

Figures 778 and 779
Xacto Meters
With Vertical and 45° Angle Dials

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Elnyst	1½" Figure 778	115	B	$145.00		STANDARD EQUIPMENT
2C0	Elnza	1½" Figure 779	115	B	145.00		
2C0	Elnzot	2" Figure 778	155	B	169.00		
2C0	Elnzuv	2" Figure 779	155	B	169.00		
2C0	Elnzwa	2½" Figure 778	335	B	294.00		
2C0	Elnzxe	2½" Figure 779	335	B	294.00		
2C0	Elnzyo	3" Figure 778	425	B	318.00		
2C0	Elnzzu	3" Figure 779	425	B	318.00		
2C0	Elnzzyz	*Dial Assembly Only			45.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

*Price includes return of counter being replaced and meter cap, which are to be returned to Fort Wayne or San Francisco, transportation charges prepaid.

If a customer has a Fig. 778 Xacto Meter and wishes to exchange the dial assembly for a Fig. 765 dial assembly, price is $45.00 and the return of the Fig. 778 dial assembly, transportation charges prepaid, to Fort Wayne or San Francisco.

BOWSER

Rev
400-10-34
2425

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE OCTOBER 1, 1934
Subject to Change Without Notice

Figure 782
Automatic Xacto Meter

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	PRICE		
2C0	Eward	1½" Size	130	$195 00		
2C0	Ewaso	2" Size	155	219 00		
2C0	Ewaty	3" Size	410	423 00		
2C0	Ewava	*1½" and 2" Automatic Dial Assembly and Valve Only		80 00		
2C0	Ewawe	*3" Automatic Dial Assembly and Valve Only		140.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

*Price includes return of counter and meter cap being replaced, which are to be returned to Fort Wayne or San Francisco, transportation charges prepaid.

If customer has a Fig. 778 Xacto Meter and wishes to exchange the dial assembly for a Fig. 782 dial assembly, price is $70.00 F. O. B. Fort Wayne for the 1½" and 2", and $130.00 for the 3" and the return of the Fig. 778 dial assembly, transportation charges prepaid to Fort Wayne.

If the customer has a Fig. 765 Meter 1½" or 2" and wishes to exchange the dial assembly for a 1½" or 2" Fig. 782 dial assembly, price is $64.00 F. O. B. Fort Wayne, including the return of the Fig. 765 dial assembly, transportation charges prepaid to Fort Wayne, Ind.

BOWSER

Rev
400-10-34
2425

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE OCTOBER 1, 1934

Subject to Change Without Notice

Figure 783
Automatic
Xacto Meter
(All-Metal)

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	PRICE
2C0	Exact	1½" Size	180	$213 00
2C0	Exedl	2" Size	215	237 00
2C0	Exopa.	3" Size	490	459 00
2C0	Ewava	*1½" and 2" Automatic Dial Assembly and Valve Only		80 00
2C0	Ewawe	*3" Automatic Dial Assembly and Valve Only		140 00

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

*Price includes return of counter and meter cap being replaced, which are to be returned to Fort Wayne or San Francisco, transportation charges prepaid.

If customer has a Fig. 776 Xacto Meter with Fig. 778 dial and wishes to exchange the dial assembly for a Fig. 783 dial assembly, price is $70.00 F. O. B. Fort Wayne for the 1½" or 2" and $130.00 for the 3" and the return of the Fig. 778 dial assembly, transportation charges prepaid to Fort Wayne.

If the customer has a Fig. 785 Meter 1½" or 2" and wishes to exchange the dial assembly for a 1½" or 2" Fig. 783 dial assembly, price is $64.00 F. O. B. Fort Wayne, including the return of the Fig. 785 dial assembly, transportation charges prepaid to Fort Wayne, Ind.

BOWSER

Revision
400-7-34
2280

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE MARCH 1, 1934

Subject to Change Without Notice

Figure 785
Automatic
XACTO METER
All Metal

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE
2C0	Elnnabo	1½" Size	165	A	$188 00
2C0	Elnnace	2" Size	200	A	212 00
2C0	Elnnadu	*Dial Assembly Only		B	55 00

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

*Price includes return of counter being replaced, and meter cap, which are to be returned to Fort Wayne or San Francisco, transportation charges prepaid.

If customer has a Fig. 776 with Fig. 778 dial and wishes to exchange the dial assembly for a Fig. 785 dial assembly, price is $45.00 and the return of the Fig. 778 dial assembly, transportation charges prepaid, to Fort Wayne or San Francisco.

BOWSER

New
400-7-34
2294

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE AUGUST 10, 1934

Subject to Change Without Notice

Figure 787
Tank Truck Metering Unit

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE	
1C7½	Elnnda	1¼" Size	233	A	$148 00	STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER
New
400-7-34
2294

PRICES F. O. B. FORT WAYNE, INDIANA
EFFECTIVE AUGUST 10, 1934
Subject to Change Without Notice

Figure 787
Tank Truck Metering Unit

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
1C7½	Elnnda	1¼" Size	233	A	$148 00		STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER
Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA
EFFECTIVE MARCH 1, 1934
Subject to Change Without Notice

Figure 789
Xacto Can Filling Unit
One-Quantity Pre-determined

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2CO	Elnnes	1¼" Size	175	C	$211 00		STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER
Revision
400-3-34
2061

PRICES F. O. B. FORT WAYNE, INDIANA
EFFECTIVE MARCH 1, 1934
Subject to Change Without Notice

Figure 790
Xacto Can Filling Unit
Three-Quantity Pre-determined

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2CO	Elnnit	1¼" Size	175	C	$260 00		STANDARD EQUIPMENT

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-6-34
2222

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE JUNE 1, 1934

Subject to Change Without Notice

Registering Measure and Xacto Meter Accessories (2)

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. Approx.	Shipping Date Approx.	PRICE		
2C0	Elmbo	Fig. 749, 3" Air Chamber & Air Release	800	A	$206.00		
2C0	Elmca	Fig. 749, 4" Air Chamber & Air Release	800	B	216.00		
2C0	Elmde	Fig. 749, 6" Air Chamber & Air Release	1450	B	282.00		
2C0	Elmer	Fig. 749, 8" Air Chamber & Air Release	2000	E to G	334.00		
2C0	Elmfu	Fig. 749, 10" Air Chamber & Air Release	2000	E to G	348.00		
2C0	Elogy	Fig. 753-C, 1½" Air Release	115	A	58.50		
2C0	Elone	Fig. 753-C, 2" Air Release	230	A	72.00		
2C0	Elope	Fig. 753-C, 3" Air Release	240	A	72.00		
2C0	Embant	Fig. 775, 1½" and 2" Combination Air Release and Strainer	28	A	50.00		
2C0	Japura	Fig. 780 Check Valve 1½" or 2"	15	A	7.00		
2C0	Japyz	Fig. 780 Check Valve, 3"	20	A	16.00		
2C0	Embap	Fig. 781 Automatic Vent Valve	12	A	10.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

BOWSER

Revision
400-6-34
2222

PRICES F. O. B. FORT WAYNE, INDIANA

EFFECTIVE JUNE 1, 1934

Subject to Change Without Notice

Registering Measure and Xacto Meter Accessories (1)

INDEX	CODE WORDS	EQUIPMENT DESCRIPTION	Shipping Weight Lbs. (Approx.)	Shipping Date (Approx.)	PRICE		
2C0	Eloab	Fig. 281 Portable Carriage	39	B	$45.00		
2C0		Fig. 282 Portable Carriage			55.50		
NCC		Extra Tail Piece for Quick Hose Coupling		B	.60	Net	
2C0		Can Platform		B	4.75		
2C0		Fig. 730, ¾" & 1¼" Strainer, Cast Iron			6.75		
2C0	Elock	Fig. 730, 1½" Strainer, Cast Iron	16	A	7.50		
2C0	Eloda	Fig. 730, 2" Strainer, Cast Iron	24	A	9.50		
2C0	Eloef	Fig. 730, 2½" Strainer, Cast Iron	55	A	21.50		
2C0	Eloffa	Fig. 730, 3" Strainer, Cast Iron	60	A	21.50		
2C0	Elofgo	Fig. 730, 4" Strainer, Cast Iron	220	B	60.00		
2C0	Elogha	Fig. 730, 6" Strainer, Cast Iron		B	150.00		
2C0	Elohe	Fig. 730, 8" Strainer, Cast Iron		B	150.00		
2C0	Ellab	Fig. 730, 2" Strainer, Aluminum	12	A	18.50		
2C0	Eller	Fig. 730, 2½" Strainer, Aluminum	20	A	41.50		
2C0	Ellom	Fig. 730, 3" Strainer, Aluminum	25	A	41.50		
2C0	Elmab	Fig. 749, 2" Air Chamber & Air Release	650	A	196.00		

Prices cover Standard Equipment as described in Bulletin—subject to regular Quantity Discounts.

NOTE—See Registering Measure and Xacto Meter Accessories (2) for additional Accessories.

VOLUME INFORMATION

KERSHNER KINFOLK

0 Volume(s) Selected

TITLE: Kershner kinfolk.

PUB INFO: Kershner Family Association, Charlotte, N.C. : c1982-

No. Volume
1. Index vols. 4,5,6
2. Volume 12, 1993
3. Volume 11, 1992
4. Volume 10, 1991
5. Volume 9, 1990
6. Volume 8, Number 1/Jan-Mar '89

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VOLUME INFORMATION

KERSHNER KINFOLK

0 Volume(s) Selected

TITLE: Kershner kinfolk.

PUB INFO: Kershner Family Association, Charlotte, N.C. : c1982-

No. Volume
1. Volume 7, No.1-4,Jan.-Dec.1988
2. Volume 6, no.1
3. Volume 5, no.1
4. Volume 4, no.1
5. Volume 3, no.1
6. Volume 2, no.1

Enter the number of a volume from the list above.

Volumes at GENEALOGY DEPT are highlighted.

<F1> Start Over <F2> Help

__ Display Full Record <F7>
__ Copy Availability <F8>
__ Display Summary
__ Go To Volume
__ Select All
__ More Options... Space Bar

VOLUME INFORMATION

KERSHNER KINFOLK

0 Volume(s) Selected

TITLE: Kershner kinfolk.

PUB INFO: Kershner Family Association, Charlotte, N.C. : c1982-

No. Volume
1. Volume 1, no.1

nter the number of a volume from
he list above.

olumes at GENEALOGY DEPT are
ighlighted.
F1> Start Over <F2> Help

__ Display Full Record <F7> _
__ Copy Availability <F8> _
__ Display Summary _
__ Go To Volume _
__ Select All _
__ More Options... Space Bar _

FULL RECORD

Page 1 of 1
Record 1 of 1

KERSHNER KINFOLK

ITLE: Kershner kinfolk.
UB INFO: Kershner Family Association, Charlotte, N.C. : c1982-
v. ; 28 cm.
OTES 1: 290
CURRENT FREQUENCY: Quarterly
v. 12 contains combined index to volumes 10 thru 12.
UBJECT 1: Kershner family.
SBN/ISSN: 0736-0886
CLC NO: 9054688
CCN: 82-647163

elect an option ---------->

__ Display Summary _
__ Review Searches <F10> _
__ Help <F2> _
__ Backup _
__ Start Over <F1> _
__ _

F1> Start Over <F2> Help